THREE NEW SPECIES OF *GEKKO* AND REMARKS ON *GEKKO HOKOUENSIS* (LACERTIFORMES, GEKKONIDAE)

Kai-ya Zhou[1], Yue-zhen Liu[1], and De-jun Li[2]

[1] Department of Biology, Nanjing Normal College
[2] Department of Biology, Zunyi Medical College

In: Acta Zootaxonomica Sinica 7(4): pp.438-446+pls.1-2, published in October 1982.

Translated by
Hidetoshi Ota[3], Tsutomu Hikida[3] & Kuang-yang Lue[4]

[3] Department of Zoology, Kyoto University
[4] Department of Biology, National Taiwan Normal University

SMITHSONIAN HERPETOLOGICAL INFORMATION SERVICE
No. 77

1989

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with us.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, U.S.A. Please include a self-addressed mailing label with requests.

TRANSLATORS' NOTES

In preparing the English version from the original (in Chinese, with English summary), we attempted to make as literal a translation as possible. However, a few minor changes were made with footnotes (* – ****); these footnotes follow the references. Locality names were written in Continental spellings, followed by Taiwanese spellings in parentheses at their first appearance.

We thank R.I. Crombie and G.R. Zug for their assistance and encouragement during the process of preparation of the present manuscript.

INTRODUCTION

Among the gekkonid genera occurring in China, *Gekko* is the largest group with the widest range of distribution. Six species and two subspecies have hitherto been known for the genus from China (Stejneger, 1932; Chen, 1969). During 1975 to 1980, Department of Biology, Nanjing Normal College collected 1637 specimens of *Gekko* from Hebei (Hopei), Shanxi (Shansi), Shaanxi (Shensi), Shandong (Shantung), Henan (Honan), Jiangsu (Kiangsu), Anhui (Anhwei), Hubei (Hupeh), Sichuan (Szuchuan), Zhejiang (Chekiang), Fujian (Fukien), Jiangxi (Kiangsi), Hunan (Hunan), Guizhou (Kweichow), Yunnan (Yunnan), Guangdong (Canton), Hainan (Hainan)*, and Guangxi (Kwangsi) Provinces. Several specimens were also collected from Guizhou Province by Department of Biology, Zunyi Medical College. While studying these specimens, three new species were discovered. On the other hand, *Gekko japonicus hokouensis* from Yanshan (Chainshan) Prefecture, Jiangxi Province, proved to represent a good species. Consequently, ten *Gekko* species** are presently recognized from China as follows:

Key to species of *Gekko* in China

1. Rostral separated from nostril 2
   Rostral in contact with nostril 3

2. Body relatively large, longer than 200 mm in total length; tubercles not particularly concentrated in upper margin of ear opening .... *G. gecko*
   Body relatively small, shorter than 150 mm in total length; upper margin of ear opening with cluster of enlarged conical tubercles concentrated in high density .... *G. auriverrucosus* sp. nov.

3. Male with 24 femoral pores in each side .... *G. kikuchii*
   Male with preanal, or preanal-femoral pores 4

4. A single enlarged spur on each side of base of tail 5
   Enlarged spurs, two to three, with slight variation, on each side of base of tail 8

5. Webs between digits evident 6
   Webs between digits very slight or absent 7

6. Tubercles absent on dorsum of body; male with 7-11 preanal pores .... *G. subpalmatus*
   Tubercles present on dorsum of body; male with 17-27 preanal pores .... *G. chinensis*

7. Supranasals in contact; dorsal tubercles flat; head and body length reaching 80 mm ....
   .... *G. liboensis* sp. nov.
   Supranasals separated by a small scale; dorsal tubercles relatively convex; head and body length not greater than 70 mm .... *G. hokouensis*

8. Granular scales on dorsum of body relatively large; dorsal tubercles flat, in low density ....
   .... *G. swinhonis*
   Granular scales on dorsum of body relatively small; dorsal tubercles relatively convex, in high density 9

9. Dorsal surfaces of body, thigh, and shank with much enlarged tubercles ....
   .... *G. scabridus* sp. nov.
   Tubercles moderately enlarged in dorsal surfaces of body and shank, usually lacking in thigh...
   .... *G. japonicus*

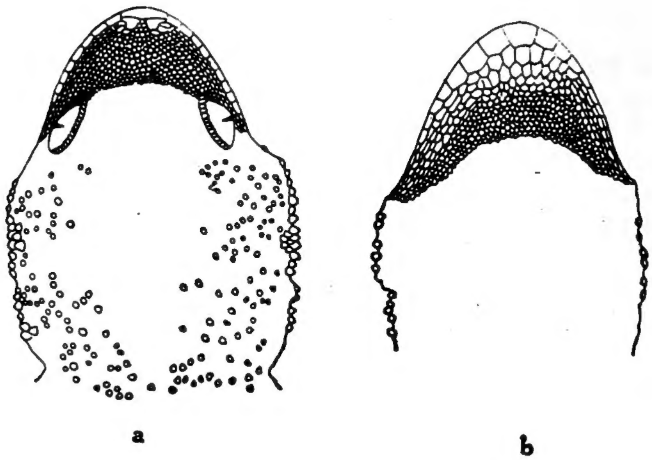


Fig. 1. *Gekko auriverrucosus* sp. nov. a. Dorsal view of head; b. Ventral view of head.

***Gekko auriverrucosus* Zhou et Liu sp. nov.** (Plate I: 2, Fig. 1)

Holotype—Male (NNC 80275), collected from Hejin (Hojin) Prefecture, Shanxi Province (alt. 459 m), on 19 August 1980. Allotype: female (NNC 80243), collection date and locality as for holotype. Paratypes: 33 males and 41 females, collected from Hejin, Yongji (Engtsi), and Linyi (Linyi) Prefecture, Shanxi Province. Collector: Xin-rong Xu. Type specimens are deposited in Department of Biology, Nanjing Normal University.

Diagnosis—Rostral separated from nostril; upper margin of ear opening with cluster of enlarged conical tubercles gathering in high density; tubercles uniformly scattered in temporal and occipital regions, neck, and dorsal surfaces of body, base of tail and limbs; male with 8-11 preanal pores.

Description—Snout about twice as long as eye diameter, distinctly longer than distance between eye and ear opening; diameter of ear opening 0.9-1.5 mm, about 30-44% of eye diameter; rostral twice as broad as high, angulated at midpoint dorsally, separated from nostril; nostril surrounded by first supralabial, supranasal, and two small scales; supranasals moderately enlarged, slightly longer than broad, separated from each other by a minute scale, or in contact with each other medially; supralabials 9-11; infralabials 9-11; mental pentagonal; chin shields forming several rows of transverse arches; first row normally comprising five shields, each slightly longer than broad, median three largest; scales following chin shields and reaching gular region uniform, granular (Fig. 1).

About 12 scales between nostril and eye; interorbital scales about 25; upper margin of ear opening with tubercle cluster comprising about six enlarged conical tubercles gathering in high density; around jaw angle and preotic region also with enlarged conical tubercles; tubercles uniformly scattered among dorsal granular scales, from temporal and occipital regions to base of tail, in 16-20 irregular rows at midbody; dorsal surfaces of forelimbs covered with small tubercles; on dorsal surfaces of hindlimbs, tubercles scattered among granular scales; scales granular in gular region, imbricate in the other part of ventral surface of body; webs between digits rudimentary; underneath dilated portions of toes with lamellae, 6-8 on toe I, 6-8 on toe II, 6-8 on toe III, 6-8 on toes IV, and 7-9 on toe V; male with 8-11, mostly 8-9 preanal pores.

Table 1. Measurements (in mm) of specimens of *Gekko auriverrucosus.*

Specimens	Total length	Eye diameter	Diameter of ear opening	Snout length	Head length	Axilla groin length	Fore-limb length	Hind-limb length
Holotype (NNC 80275)	125.5 (62+63.5)	3.2	1.2	6.7	15	28	18.5	24.5
Allotype (NNC 80243)	135.5 (65.5+70)	3.3	1.3	7.3	16	30.5	19	27
Paratypes								
11 males from Hejin	119 (59+60)- 130 (63+67)	3- 3.5	1- 1.3	6.3- 7	14- 16	25- 29.5	16- 19	24- 25
16 females from Hejin	117 (56+61)- 133 (65+68)***	3- 3.6	1- 1.5	6.4- 7.5	14- 17	27- 33	16.5- 20	23- 28.5

Tail slightly compressed, with two or three enlarged spurs in each side at base; dorsum of tail covered with tubercles of various sizes; annular grooves in about every sixth to eighth tubercle; venter of tail with a longitudinal row of laterally elongated shields.

Dorsal ground color of preserved specimen pale gray; a brown bar from nostril through eye and ear to shoulder; top of head with brown markings; dorsal surfaces of neck and body with 5-6 transverse brown bands; dorsum of tail with 9-13 transverse brown bands; posterior edge of transverse bands in body and tail darkly edged; dorsal surfaces of four limbs also with transverse brown bands; venter of body light reddish yellow.

This new species might be easily misidentified as *G. japonicus*. However, the latter species has a rostral entering the nostril, and lacks a cluster of tubercles in the upper margin of the ear opening. Thus, *G. japonicus* is actually distinct from the present new species.

In the natural habitat, the density of *G. auriverrucosus* is very high. It prefers to perch on high portions of walls, and occasionally appears on artificially lighted areas to search for prey. In June and July, the present species has its reproductive season. Juveniles collected between 19 and 22 August had already reached 31-32.5 mm in head and body length. All adult females collected on the same date from the same locality with the above juveniles possessed no mature eggs. About 1/6 of the total sample had parasitic mites, especially in high density on digits.

Gekko liboensis **Zhou et Li sp. nov.** (Plate II: 1, Fig. 2)

Holotype—Female (TMC 791669), Chengguan (Chengkwang), Libo (Libo) Prefecture, Guizhou Province (alt. 430 m), on 5 July 1979, by Zhi-lu Zhao. This specimen is deposited in Department of Biology, Zunyi Medical College.

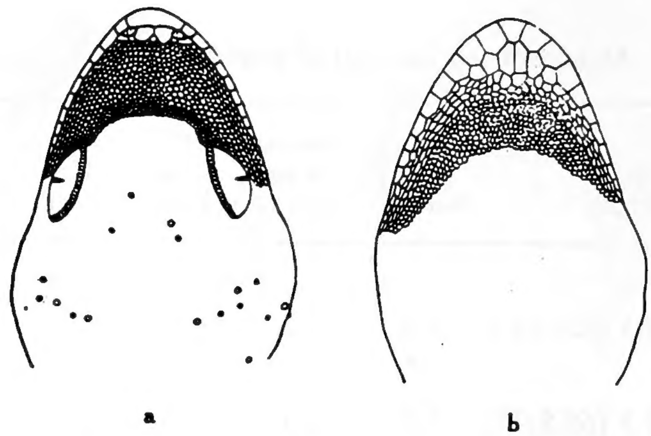


Fig. 2. *Gekko liboensis* sp. nov. a Dorsal view of head; b. Ventral view of head.

Diagnosis—Head and body length exceeding 80 mm; supranasals large, in contact with each other medially; flat, cycloid tubercles among dorsal granular scales, forming about 10 irregular longitudinal rows; webs evident between fingers I, II and III, very slight between fingers III, IV and V.

Description—Holotype very large, head and body length nearly 85 mm; snout 1.8 times as long as eye diameter, distinctly longer than distance between eye and ear opening; diameter of ear opening 2 mm, about 40% of eye diameter; rostral broader than deep, upper margin slightly concaved at midpoint; nostril surrounded by rostral, first supralabial, supranasal, and two small scales; supranasals large, in contact with each other medially; supralabials 12; infralabials 11; mental triangular; median pair of chin shields twice as long as broad, posteriorly entered by a pair of small polygonal chin shields (Fig. 2).

About 18 scales between nostril and eye; interorbital scales about 40; flat, cycloid tubercles uniformly scattered in low density on dorsum, from parietal and occipital regions to base of tail, forming about 10 irregular rows on body; fore- and hindlimbs without tubercles; ventral surface posterior to neck covered with imbricate scales; 10 enlarged scales in preanal region.

Underneath dilated portions of fingers covered with lamellae, eight on finger I, eight on finger II, nine on finger III, nine on finger IV, and eight or nine on finger V; rudimentary webs evident

Table 2. Measurements (in mm) of a specimen of *Gekko liboensis*.

Specimens	Total length	Eye diameter	Diameter of ear opening	Snout length	Head length	Axilla groin length	Fore-limb length	Hind-limb length
Holotype (TMC 791669)	121.8 (84.8+37) (regenerated tail)	5	2	9.2	21	37	25.2	35

between fingers I, II and III, faintly between fingers III, IV and V; margins of webs attaching to proximal one third of toes; hindlimb much developed, its length 95% of axilla to groin length; underneath dilated portions of toes covered with lamellae, eight on toe I, seven or eight on toe II, eight on toe III, nine on toe IV, and nine on toe V; rudimentary webs evident between toes I, II, III and IV; a single large spur on each side of base of tail; tail regenerated, very short.

Dorsal ground color in preservative grayish tan; a brown bar running along lower margin of eye, almost reaching to ear opening posteriorly; dorsal surfaces of neck and body with nine transverse brown bands; dorsal surfaces of limbs also with transverse brown bands; venter of body pale reddish yellow.

This new species greatly resembles *G. hokouensis*. However, the latter has supranasals separated from each other, and conical dorsal tubercles. Moreover, the head and body length of *G. hokouensis* is shorter than 70 mm.

G. liboensis is rarely observed at Chengguan, Libo Prefecture.

Gekko hokouensis **Pope**

Gekko japonicus hokouensis Pope, 1928, Amer. Mus. Novitates 325: 1-2 (Yanshan Prefecture, Jiangxi Province)

Pope (1928) regarded this form as a subspecies of *G. japonicus*, and stated that *G. j. hokouensis* differs from the nominal subspecies only in the number of cloacal spurs; he noted that the former has a single spur on each side of the base of tail, whereas the latter has two or three spurs. While investigating a large series of specimens, we found that *hokouensis* has a relatively large spur, measuring about 2.2-3.1 mm for the male and 1.3-2.0 mm for the female in maximum diameter. Although the spur is more or less grooved and incompletely divided in a few males and most females, the outline of the single spur remains apparent in all animals (Plate II: 4-9). On the other hand, *japonicus* possesses two or three smaller spurs below three larger spurs. The size of each spur is relatively small, and the maximum diameter of the largest spur measured 1.2-1.5 mm in the male and 0.6-1.0 mm in the female (Plate II:10-11). Differences are recognizable between *hokouensis* and *japonicus* also in the condition of dorsal tubercles as follows. In *hokouensis*, tubercles are absent on the four limbs, and relatively few around the middle of the body. On the other hand, in *japonicus*, the dorsal surface of the forearm and shank is covered with tubercles, and the tubercles around the middle of the body are in relatively high density (Plate II:2-3, Table 3).

Table 3. Comparison of dorsal tubercles in *Gekko hokouensis* and *G. japonicus*.

Species	N	Localities	Occipital and neck	Body	Upper arm	Forearm	Thigh	Shank
Gekko hokouensis	271	17 locations in six provinces	- / +	+	-	-	-	-
Gekko japonicus	747	50 locations in 12 provinces	+	++	-	+	- / +	+

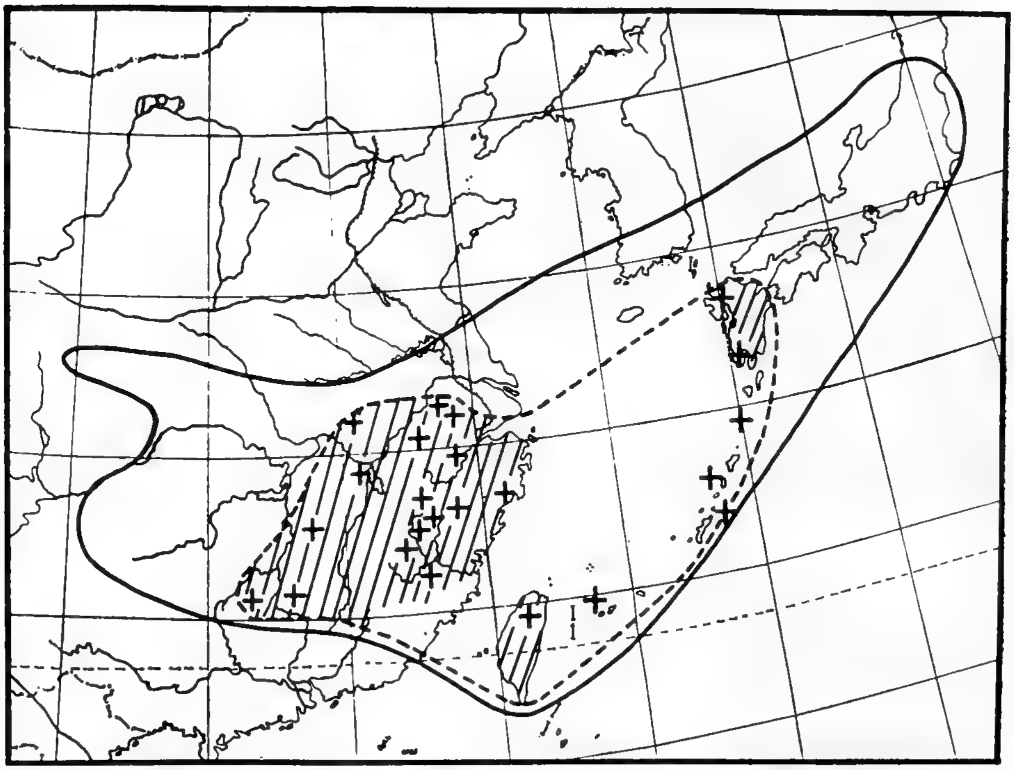


Fig. 3. Distributions of *Gekko hokouensis* and *Gekko japonicus*. Ranges of the former and the latter are outlined by broken and complete lines, respectively. Cross-marks indicate localities of specimens of *G. hokouensis* cited in the present study****.

On the basis of the above characteristics, we identified 271 specimens out of 1018 of *G. japonicus* (sensu lato) as *hokouensis*, and the remaining 747 as *japonicus* (sensu stricto). The former specimens were collected from 17 prefectures of six provinces, and the latter from 50 prefectures or cities of 12 provinces. The sampling localities of *hokouensis* are scattered within the range of *japonicus* (Fig. 3).

Conditions of natural habitats also differ between these two gekkonids; while *hokouensis* has its habitat in montane environments, *japonicus* is widely distributed in cities and villages of the plain regions. In Jiujiang (Kiukiang) City, for example, *japonicus* is found in urban area, whereas *hokouensis* in Lushan-haihui (Lushan-haihui), Bailudong (Bailudong) and Guling (Kuling). In Yixing (Ising) Prefecture, *japonicus* and *hokouensis* occur in the lowland and montane areas, respectively. The mutual displacement between *hokouensis* (a mountain dwelling species) and *japonicus* (a plain dwelling species) around a sympatric area much resembles the displacement between *Eremias brenchleyii* and *E. argus*. However, there are some areas where both of these gekkonids are collected from the same point at the same time. For example, of the 25 specimens obtained within a city of Chong'an (Chungan) Prefecture, on 26-27 June 1978, 15 specimens were identified as *japonicus* and the remainder as *hokouensis*. No intermediate forms were found among the above specimens.

Based on the morphological distinctiveness, sympatric occurrence, and ecological differences, we remove *hokouensis* from the subspecific status of *G. japonicus*, and regard it as a distinct species *Gekko hokouensis* Pope.

Within China, *G. hokouensis* is distributed in Yixing and Lishui (Lishui), Jiangsu Province, Tonglu (Tonglu) (Stejneger, 1932), Longquan (Longchuan), Beiyandangshan (Beiyantangshan), Zhejiang Province, Pucheng (Pucheng), Chong'an, Wuyishan (Wuyishan), Shaowu (Shaowu), Youxi (Yousi), Fujian Province, Taiwan Province (Maki, 1923), Jinzhai (Ginshai; Xuzhou Normal University), Huangshan (Huangshan) and Taiping (Taiping; Chengdu Institute of Biology), Anhui Province, Yanshan, Ninggang (Ningkwang), Lushan, Jiangxi Province, Yizhang (Ichang; Zhengdu Institute of Biology), and Jiangyong (Kiangyong)[1], Hunan Province. In Taiwan, *G. japonicus* has been reported from several localities (Chen, 1969). Maki (1923) described specimens of "*G. japonicus*" from Taiwan as possessing a single process in each side of the base of tail, and limbs covered only with granular scales. These characteristics are identical with those of *G. hokouensis*. Of the specimens of "*G. japonicus*" collected from Japan, some animals such as the one from Nagasaki (USNM 13563; Stejneger, 1907) were reported to have three spurs in each side at the base of the tail, and tubercles on the dorsum of the shank, whereas others such as specimens from Yamagawa (USNM 31821 and 31822; Stejneger, 1907) and Fukuoka (Okada, 1936: fig. 1) possess a single spur and lack tubercles on limbs. Nakamura and Uéno (1963) noted that *G. japonicus* has normally a single but occasionally two or three tubercles, and that some animals possess tubercles on limbs. In October 1981, one of us examined specimens under the care of Dr. Shun-Ichi Uéno at National Science Museum, Tokyo. Of the 21 specimens there, 12 from Tokara Is. (0231, 02287, 02293-95), Tokunoshima I. (0924), Yoronjima I. (0524, 02288-90, 02292) and Iriomotejima I. (0475) were identified as *G. hokouensis*, and the other nine from Tokyo (0236, 02286, 02297-98), Kyoto (02302) and Tsushima I. (0038, 0851, 0853, 02296) as *G. japonicus*. These results indicate that "*G. japonicus*" in Japan actually includes both *G. hokouensis* and *G. japonicus* (sensu stricto).

***Gekko scabridus* Liu et Zhou sp. nov.** (Plate I: 1, Fig. 4)

Gekko sp. Hu Shu-chin, Djao Er-mie and Liu Cheng-chao, 1973, Acta Zoologica Sinica 19(2): 155, from Guiyang (Kweiyang)

Holotype—Male (NNC 80122), Yongren (Yongzen) Prefecture, Yunnan Province (alt. 1531 m), on 4 Aug. 1980. Allotype: female (NNC 80143), collection date and locality as for holotype. Paratypes: 16 males and 33 females collected from Yongren Prefecture, Yunnan Province, and Miyi (Miyi) Prefecture, Sichuan Province. Collector: Xin-rong Xu. Type specimens are deposited in Department of Biology, Nanjing Normal University.

Diagnosis—Tubercles covering dorsal surfaces of body and hindlimbs much enlarged; male with 10-15 preanal pores.

Description—Eye relatively large, its diameter longer than half, as long as 51.4-57.1%, of snout length; snout slightly longer than distance between eye and ear opening; diameter of ear opening 0.9-1.5 mm, about 23-41% of eye diameter; rostral rectangular, its breadth less than twice of height; in a few specimens, upper margin of rostral slightly concave dorsally at mid point; nostril surrounded by rostral, first supralabial, supranasal, and two small scales; supranasals moderately enlarged, slightly broader than long, separated from each other normally by a single scale, but in

[1] All the locality data without citations of authors or institution are based on the specimens deposited in Department of Biology, Nanjin Normal College.

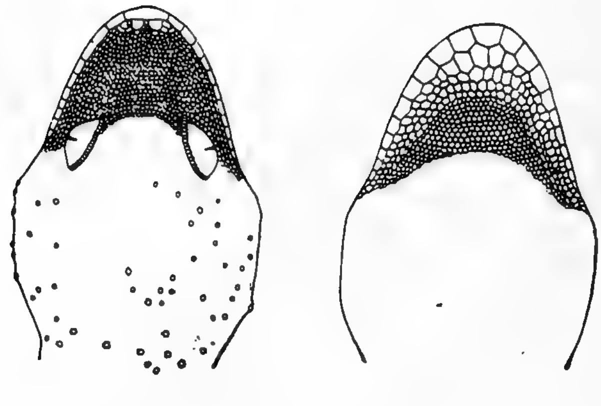


Fig. 4. *Gekko scabridus* sp. nov. a. Dorsal view of head; b. Ventral view of head.

some specimens, by two scales, or in contact with each other medially; supralabials 9-11; infralabials 9-11; mental pentagonal; chin shields longer than broad, median pair largest, outer pair relatively small, continuously graded to small granules through three to four rows of small hexagonal scales (Fig. 4). About 12 scales between nostril and eye; interorbital scales about 30; tubercles scattered among dorsal granular scales in high density, from frontal, parietal, temporal and occipital regions of head to base of tail, in 17-21 irregular rows around middle of body, those on dorsum of body extremely enlarged; limbs covered with granular scales dorsally, tubercles present on limbs except for upper arms; tubercles on hindlimbs distinctly enlarged like those in dorsum of body; venter of body covered with imbricate scales; interdigital webbings rudimentary; underneath dilated portions of digits with lamellae, 6-9 on toe I, 6-9 on toe II, 7-9 on toe III, 7-9 on toe IV, and 7-10 on toe V; male with 10-15, mostly 12 or 13, preanal pores.

Tail slightly compressed, with two or three enlarged spurs on each side at base; only one specimen (NNC 80166) of 51 examined had a single enlarged spur on both sides; dorsum of tail covered with granular scales; annular grooves in about every seventh to ninth row of granules; grooves in proximal one third of tail margined by six to eight enlarged tubercles posteriorly, such tubercles gradually disappearing in remaining portion of tail; venter of tail covered with imbricate scales, median scales enlarged and irregularly arranged, paired or not paired, in distal two-thirds to four-fifths of tail.

Dorsal ground color of preserved specimen pale brown; two brown bars from nostril through eye to temporal region; dorsal surfaces of head, body and limbs with irregular brown spots and reticulations; 7-9 transverse bars on neck and body; dorsum of tail with 10-14 transverse brown bars; venter of body light reddish yellow.

G. scabridus closely resembles *G. japonicus*. However, these species differ from each other as follows. In *G. japonicus*, dorsal tubercles on the body and shanks are distinctly smaller than those in *G. scabridus*, and tubercles are normally lacking on thighs. Moreover, male *G. japonicus* normally has only 4-8 preanal pores.

In the natural habitat, *G. scabridus* occurs in very high densities, and is observed equally in lighted and dark areas of walls. Of the specimens examined, a few animals possessed parasitic

Table 4. Measurements (in mm) of specimens of *Gekko scabridus*.

Specimens	Total length	Eye diameter	Diameter of ear opening	Snout length	Head length	Axilla groin length	Fore-limb length	Hind-limb length
Holotype (NNC 80122)	112.5 (57.5+55)	3.7	1.3	7	15.7	26	17.5	26
Allotype (NNC 80143)	120.5 (58+62.5)	3.8	1.4	7	15.7	27	19	24.5
Paratypes								
11 males Yongren	114 (57+57)- 138 (64+74)	3.7- 4.2	1.2- 1.5	7- 7.5	15.4- 17	25.5- 30	17.5- 20	25- 27
12 females Yongren	116.5 (56.5+60)- 140.5 (63.5+77)	3.5- 4	1.1- 1.5	6.3- 7.3	14.5- 17	25- 30	16.5- 19	24- 27

mites. Juveniles collected in the beginning of August had reached 28-33 mm in head and body length. All adult females collected in the same date from the same locality with the above juveniles had no mature follicles.

References

Chen, J.T.F. 1969. A Synopsis of the Vertebrates of Taiwan. Commercial Press; Taipei. (in Chinese)

Hu, S.-C., E.-M. Djao, and C.-C. Liu. 1973. A survey of amphibians and reptiles in Kweichow Province, including a herpetofaunal analysis. Acta Zoologica Sinica 19(2): 149-178. (in Chinese with English summary)

Maki, M. 1923. On the gekkonid lizards of Taiwan. Zool. Mag. 35: 193-202. (in Japanese)

Nakamura, K., and S.-I. Uéno. 1963. Japanese Reptiles and Amphibians in Colour. Hoikusha; Osaka. (in Japanese)

Okada, Y. 1936. Studies on the lizards of Japan. Contribution I. Gekkonidae. Sci. Rep. Tokyo Bunrika Daigaku, B 2(42): 233-289.

Pope, C.H. 1928. Four new snakes and a new lizard from South China. Amer. Mus. Novitates 325: 1-4.

———. 1929. Notes on reptiles from Fukien and other Chinese Provinces. Bull. Amer. Mus. Nat. Hist. 58: 335-487.

———. 1935. The Reptiles of China. Nat. Hist. Central Asia. Vol. 10. Amer. Mus. Natur. Hist., New York.

Stejneger, L. 1907. Herpetology of Japan and adjacent territory. Bull. U.S. Natl. Mus. 58(1): 1-575.

———. 1932. The Chinese lizards of the genus *Gekko*. Proc. U.S. Natl. Mus. 82(3): 1-8.

Wermuth, H. 1965. Liste der rezenten Amphibien und Reptilien, Gekkonidae, Pygopodidae, Xantusiidae. Walter de Gruyter & Co.; Berlin.

Translators' Footnotes

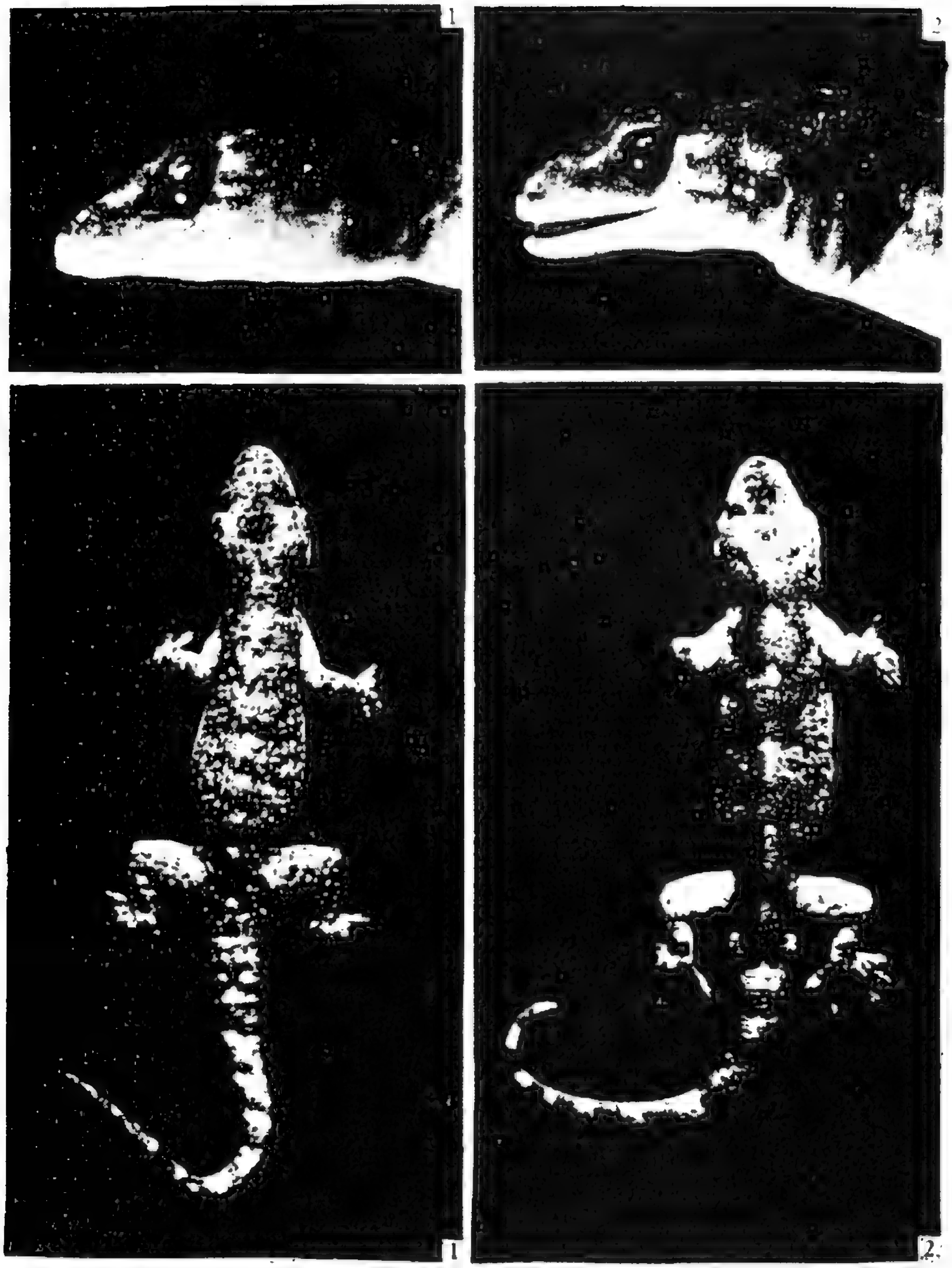
* In the original, Hainan Island was included in Guandong Province. However, this island was removed from the latter to form an independent province, Hainan Province, by itself in 1987.

** The original states "10 *Gekko* species and one subspecies", but it lists only 10 species in the key.

*** Table 1 in the original contains "113 (65+68)", but this must be a typographical error.

**** The figure legend in the original states that the cross-marks in Fig. 3 indicate localities where *G. japonicus* was collected. But it is evident, from the content of the text, that those marks actually represent sampling localities of *G. hokouensis*.

Plate I.



1. *Gekko scabridus* Liu et Zhou, sp. nov. Lateral view of head (above), and dorsal view (below).
2. *Gekko auriverrucosus* Zhou et Liu, sp. nov. Lateral view of head (above), and dorsal view (below).

1. *Gekko liboensis* Zhou et Li, sp. nov. Dorsal view.
2. *Gekko hokouensis*. Dorsal view of base of tail and hind limbs.
3. *Gekko japonicus*. Dorsal view of base of tail and hind limbs.
4-9. *Gekko hokouensis*. Enlarged spurs on right side of base of tail in males (4 and 5) and females (6 to 9). Spurs in 4 and 6 have no shallow furrows, whereas those in the remainders (5, 7, 8, and 9) show more or less developed furrows incompletely dividing the spurs.
10-11. *Gekko japonicus*. Spurs on right side of base of tail in a male (10) and a female (11).

INDEX TO THE BIOGRAPHIES OF HERPETOLOGISTS & ICHTHYOLOGISTS COPEIA 1913-1988

C. J. McCOY

Section of Amphibians and Reptiles
Carnegie Museum of Natural History

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 78

1989

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with us.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, U.S.A. Please include a self-addressed mailing label with requests.

Let us now praise famous men, and our fathers that begat us. All these were honored in their generations, and were the glory of their times (Ecclesiasticus 44:1).

INTRODUCTION

The history of a science consists not only of the chronology of development of knowledge and ideas, but equally of the life stories of men and women who contribute to that science. For ichthyology and herpetology a significant part of this human record is contained in seventy-five years of the journal Copeia. Unfortunately this rich source of historical and biographical information has been largely inaccessible, as most of the death notices, obituaries, and biographical sketches in Copeia appeared in the "Editorial Notes and News" section of the journal, and are not included in the journal's annual index. This compilation will provide ready access to biographies in Copeia and, hopefully, stimulate an appreciation for the personalities who fostered modern ichthyology and herpetology.

The index consists of three lists: the biographical articles arranged alphabetically by name of subject and keyed to the bibliography by number, an annual list of biographies, and a bibliography. The content of articles is coded as follows: "N" is a death notice only; "B" is a biography; "P" indicates a portrait is included; "L" identifies a biography with a bibliography. The biographies range in length from a few words to several pages. Although the distinction is arbitrary in some cases, the "B" category is reserved for articles that have substantial biographical content. Three major articles in Copeia (Dymond, 1964, (1):2-33; Myers, 1964, (1):34-41; Hubbs, 1964, (1):42-60) are not indexed. Although they contain biographical information, these articles are primarily historical reviews.

Much of the credit for documenting the lives of ichthyologists and herpetologists in Copeia belongs to two of our late colleagues, incidentally also my "scientific grandfathers." The first of these, Carl L. Hubbs, had an unusually strong sense of the importance of the historical perspective. Perhaps this was because his career spanned critical years in the transition to the modern era, as did that of his mentor David Starr Jordan. Hubbs was by far the most prolific contributor of biographical articles to Copeia (24 signed articles and dozens of unsigned notes). Moreover, as first ichthyological editor (1930-1937) of the "new series" of Copeia, he pioneered regular incorporation of biographical information in "Editorial Notes and News." George S. Myers is second to Hubbs in number of biographies published in Copeia, but his contributions are models of sympathetic and insightful biography. To these two, indeed to all who have contributed to this unique record, we owe our gratitude. I thank Alan E. Leviton for (indirectly) suggesting this project, and M. Therése Giles for enduring patience.

BIOGRAPHIES

ANNUAL LIST OF BIOGRAPHIES

(32); Johnstone, James (26); Maskell, F. G. (31); Ravenel, William de Chastignier (33); Schmidt, Johannes (27); Schulte, H. von W. (28); Starks, Edwin Chapin (24); Strecker, John Kern (420); Williamson, E. B. (29).

1934- Bacon, Daniel (35); Bensley, B. A. (34); Lataste, Fernand (36); Merriman, R. Owen (39); Nelson, Edward William (37); Shufeldt, Robert Wilson (38).

1935- Cunningham, J. T. (42); Hankinson, Thomas L. (45); Ishikawa, Chiyomatsu (40); Jenkins, Oliver Peebles (41); Knight, A. P. (46); Schmidt, Frank J. W. (44); Vinciguerra, Decio (43).

1936- Babcock, John Pease (48); O'Malley, Henry (47); Schrenkeisen, Ray (50); Stevenson, John Alexander (49); White, Alfred McLaren (51).

1937- Blanchard, Frank Nelson (376); Boulenger, George Albert (66); Clemens, Lucy Wright Smith (55); Giltay, Louis Pierre (59); Henderson, Junius (67); Hyde, Jesse Earl (52); Kampen, P. N. van (69); Longley, William Harding (53); McGregor, Richard Crittenden (56); Mosauer, Walter (57); Mukerji, Dev Dev (60); Plate, Ludwig (68); Reed, Hugh D. (61); Scott, Will (62); Stephens, Frank (63); Urich, F. W. (64); Watson, David (304); Weber, Max (54); Wehrle, Richard White (58); Wolterstorff, Willy (65).

1938- Artedi, Peter (352); Berg, Leo S. (388); Borodin, Nicholas A. (70); Boulenger, George Albert (395); Lowe, John N. (71).

1939- Embody, George Charles (74, 80); Goff, Carlos Clyde (73); Grinnell, Joseph (82, 88); Hoover, Earl E. (72); Ihering, Rodolpho von (421); Jacot, Arthur Paul (81); Kendall, William Converse (75, 79); March, Douglas D. H. (83); McMurrich, James Playfair (76, 87); Miranda Ribeiro, Alipio de (84, 356); Smith, E. Victor (89); Wakiya, Yojiro (85); Werner, Franz (78); Wilson, Henry van Peters (77, 86).

1940- Bass, Jr., John F. (91); Cope, Edward Drinker (269, 357); Lutz, Adolpho (93); Noble, G. K. (92); Welter, Wilfred (90).

1941- Clark, Howard Walton (95, 96); Lahille, Fernando (94); Smith, Hugh McCormick (260, 316, 381, 401).

1942- Brumwell, Malcolm J. (97); Ditmars, Raymond L. (375); Reighard, Jacob (340).

1943- Allen, E. J. (98); Daniel, John Franklin (99); Kelly, Howard A. (100); Regan, Charles Tate (101, 410); Roule,

Louis (102); Snyder, John Otterbein (103, 317); Stejneger, Leonhard (259, 295); Woodall, Harold (104).

1944- Bromund, Fred (108); Gage, Simon Henry (109); Juday, Chauncey (106); Norman, John R. (107, 411); Townsend, Charles Haskins (105); Woodward, Arthur Smith (110).

1945- Awerinzew, Sergius (114); Berezovsky, A. I. (115); Goodnoh, Jr., Clifford A. (116); Morgan, Stanley Stewart (111); Reid, Earl Desmond (382); Sincock, Jr., Edwin H. (112); Soldatov, V. K. (117); Sumner, Francis B. (318); Taranetz, A. J. (113, 118).

1946- Barbour, Thomas (289); Boulenger, E. G. (122); Brimley, Clement Samuel (281); Dahlgren, Ulric (123); Flower, Stanley Smyth (121, 396); Nellemose, (Captain) (119); Redeke, H. C. (120); Smith, Mrs. Hugh M. (124); Taranetz, A. (125).

1947- Allen, W. E. (131); Allis, Jr., Edward Phelps (132); Clark, Hubert Lyman (129); Cyren, Otto (128); Eigenmann, Rosa Smith (127); Hay, William Perry (126); Surbeck, Georg (130); Wolterstorff, Willy (299).

1948- Bauman, Aden C. (134); Cameron, A. T. (135); Cockerell, T. D. A. (136); Eager, Grace (137); Ehrenbaum, Ernst (133); Wiley, Grace Olive (138).

1949- Hildebrand, Samuel Frederick (139); Tchernavin, Vladimir V. (140).

1950- Angel, Fernand (143); De Haas, C. O. J. (141); Hamilton, Rodgers D. (145); Hildebrand, Samuel F.(315, 319, 379, 383, 384); Lönnberg, Einar (320); McIlhenny, Edward Avery (268); Rust, Hans Theodor (146); Surber, Thaddeus (142); Wall, Frank (144).

1951- Andersson, Lars Gabriel (149); Angel, Fernand (307); Berg, Leo Semenovich (147, 389); Bishop, Sherman C. (150); Blegvad, Harald (155); Eddy, Brayton (148); Ewing, H. E. (152); Hoyt, Southgate Y. (153); Schäferna, Karel (151); Schmidt, Peter J. (156); Smith, George Milton (154); Wall, Frank (397).

1952- Barnhart, Percy S. (157); Bishop, Sherman C. (305); Engeling, Gus A. (159); Gowanloch, James Nelson (161); Lübbert, Hans (160); Starks, Chloe Leslie (358); Troemner, J. Louis (158); Wagler, Erich (162).

1953- Babcock, Harold Lester (350); Ellis, Max M. (164); Müller, Lorenz (313); Weller, Alfred (163).

1954- Duncker, Georg (166); Fassett, Harry C. (311); Gudger, E. W. (364); Johnson, Jr., J. E. (167, 377); Lantz, Louis A. (366); Weed, Alfred Cleveland (165).

1955- Allen, William Ray (169); Crimmins, Martin Lalor (168); Perkins, C. B. (416).

1956- Bertin, Léon (172); Dunn, Emmett Reid (171); Gudger, E. W. (173); Hora, Sunder Lal (392); Osburn, Raymond C. (170).

1957- Dunn, Emmett Reid (378); Pietschmann, Viktor (174); Schmidt, Karl Patterson (175).

1959- Chabanaud, Paul (177); Gordon, Myron (178, 253); Maki, Moichiro (183); Mayer, Fritz (179); Miller, Richard D. (180); Nichols, John Treadwell (297); Pfaff, J. R. (181); Schmidt, Karl Patterson (280, 369); Scofield, Norman B. (182); Seale, Alvin (314); Slevin, Joseph Richard (354); Tåning, A. Vedel (176).

1960- Andrews, Roy Chapman (188); Hanko, Bela (184); Limbaugh, Conrad (322); Mann, William M. (189); Miller, Richard B. (185); Schindler, Otto (321); Storey, Margaret Hamilton (190); Thienemann, August (187); Welch, Paul S. (186).

1961- Crawford, Sr., Donald R. (195); Curtis, Brian (191); Mann, William M. (194); Okkelberg, Peter O. (192); Roughley, T. C. (193); Storey, Margaret Hamilton (359); Vanderbilt, George (196).

1962- Bruun, Anton Frederik (197, 323); Buen, Fernando de (324); Herre, Albert W. (198); Viosca, Jr., Percy (199).

1963- Alm, Gunnar (327); Anderson, Paul (201); Burt, Charles E. (405); Cope, Edward Drinker (298); Ege, Vilhelm (325); Glauert, L. (202); Peyer, Bernhard (200); Pflueger, Al (326).

1964- Breyer-de Rooy, P. J. (415); Chernov, Sergius Alexandrovich (203, 348); Cook, Fannye A. (206); Grey, Marion (399); Hartweg, Norman E. (204); Needham, Paul R. (207); Snedigar, Robert (205).

1965- d'Ancona, Umberto (208); Barnard, K. H. (209); Clemens, Wilbert A. (210); Creaser, Charles W. (302); Davies, David H. (329); Davis, D. Dwight (211); Dymond, John Richardson (212, 385); Fox, Jr., Wade (282); Greenberg, Bernard S. (214); Howard, John K. (213); Miranda Ribeiro, Paulo de (215); Shannon, Frederick Albert (394); Thompson, William Francis (328); Wright, Anna A. (308).

1966- Baranov, Fedor Ilich (373); Fowler, Henry Weed (276);

Ooster, John van (217); Reese, Albert Moore (216).

1967- Einarsson, Hermann (218); Michałowski, Jerzy (219); Twitty, Victor Chandler (344).

1968- Bigelow, Henry Bryant (285); Cochran, Doris Mable (301); Smith, James Leonard Brierley (330); Tee-Van, John (250); Volsøe, Helge (220).

1969- Beaufort, Lieven Ferdinand de (264); Bragg, Arthur Norris (263); Cagle, Fred Ray (407); Hass, Robert L. (222); Klauber, Laurence Monroe (390); Matsubara, Kiyomatsu (331); Mohr, Erna (332); Parker, H. W. (303); Steyn, William J. (221); Turner, Clarence Lester (333).

1970- Lutz, Gualter Adolpho (223); Mitchell, F. J. (224).

1971- Ovchynnyk, Michael M. (225); Ruthven, Alexander Grant (226); Schachter, D. (228); Shetter, David S. (334); Tanzer, Ernest C. (227); Terentjev, Paul V. (279); Wright, Albert Hazen (309).

1972- Frizzell, Don L. (231); Nakamura, Hiroshi (413); Sette, Oscar Elton (232); Shaw, Charles E. (229); Starrett, William C. (230); Steinitz, Heinz (347).

1973- Babbitt, Lewis H. (235); Eddy, Samuel (414); Landreth, Hobart (233); Peters, James A. (274); Shiraishi, Yoshikazu (335); Templeton, James R. (234).

1974- Hart, John L. (386); Herald, Earl Stannard (361); Hubbs, Carl Leavitt (342, 365, 391); Loftus-Hills, Jasper J. (1); Pope, Clifford H. (343); Romer, Alfred Sherwood (283); Scortecci, Giuseppe (409).

1975- Tanaka, Shigeho (336); Whitley, Gilbert P. (367).

1976- Donoso-Barros, Roberto (368); Ginsburg, Isaac (360); Günther, Klaus (290); Meade, George P. (288); Mertens, Robert (300); Villadolid, Deogracias V. (337).

1977- Anderson, Jr., James Donald (419); Bennett, George W. (237); Conant, Isabelle (236); Cowles, Raymond Bridgman (266); Gaige, Frederick MacMahon (254); Gaige, Helen Thompson (254); Harrington, Jr., Robert W. (251); Koumans, Frederick P. (265); Lindberg, G. U. (2); Lutz, Bertha (345); Okada, Yaichiro (339); Schroeder, William C. (284); Stoye, Frederick Hans (338).

1978- Camp, Charles L. (417); Greenbank, John T. (240); Hansen, Donald F. (238); Nikolsky, G. V. (398); Storer, Tracy I. (417); Taylor, Edward Harrison (239, 286).

1979- Gloyd, Howard Kay (271); Hubbs, Carl L. (353); Martof, Bernard S. (255); Reed, Roger J. (242); Walford, Lionel A. (406); Walker, Charles F. (241, 408).

1980- Logier, Eugene Bernard Shelley (278); Maria, Niceforo (404); Tinkle, Donald W. (346); Trewavas, Ethelwynn (243).

1981- Raney, Charlotte F. (244).

1982- Eaton, Theodore H. (412); Haas, Georg (418); Johnson, Richard M. (349); Welander, Arthur Donovan (370).

1983- Böhlke, James E. (374); Grodziński, Zygmunt (402); Rivero, Luis Howell (246); Stuart, Laurence Cooper (247, 287); Ward, Jack A. (245).

1984- Clay, William Marion (277); Cooper, Gerald Paul (256); Maslin, T. Paul (393); Zaret, Thomas M. (248).

1985- Blair, William Franklin (341); Kuehne, Robert Andrew (257); Lagler, Karl F. (355); Wu Hsien-Wen (249).

1986- Breder, Jr., C. M. (252); Goin, Coleman J. (273); Myers, George Sprague (272); Richardson, Sally Leonard (275); Stensiö, Erik (363); Vladykov, Vadim Dimitrij (372); Wu Hsien-Wen (422).

1987- Carr, Jr., Archie F. (291); Czopek, Juliusz (403); Rivas, Luis Rene (293); Rosen, Donn Eric (362); Schultz, Leonard Peter (400); Smith, Philip Wayne (267); Svetovidov, A. N. (3); Zhu Yuangding (371).

1988- Hollister, Gloria (261); Miller, Frances Voorhees Hubbs (270); Smith, Margaret Mary (312); Walters, Vladimir (262).

BIBLIOGRAPHY

1. Alexander, Richard D. 1974. Jasper J. Loftus-Hills. (3):812. N

2. Andriashev, A., and Z. Krasjukova. 1977. G. U. Lindberg, 1894-1976. (3):612-613. N, B, P

3. ___, E. A. Dorofeyeva, and N. V. Parin. 1987. A. N. Svetovidov, 1903-1986. (1):272-273. N, B, P

4. Anon. 1930. Jan Metzelaar, 1821-1929. (1):23-24. N, B, P

5. ___. 1930. John N. Cobb. (1):24. N

6. ___. 1930. Benedikt Dybowsky. (1):24. N

7. ___. 1930. Stephen Alfred Forbes. (1):24. N

8. ___. 1930. Kamakichi Kishinouye. (1):24. N

9. ___. 1930. Herbert J. Pack. (1):24. N

10. ___. 1930. C. F. Silvester. (1):24. N

11. ___. 1930. Oliver Perry Hay. (4):161. N, B

12. ___. 1930. James S. Hine. (4):162. N

13. ___. 1930. José Steinbach. (4):162. N

14. ___. 1931. W. "D." Weller. (2):72. N

15. ___. 1931. David Starr Jordan. (3):146. N

16. ___. 1931. Alfred Ehrenreich. (4):166. N

17. ___. 1932. John W. Titcomb. (1):44. N

18. ___. 1932. A. C. Johansen. (2):112. N

19. ___. 1932. A. Brooker Klugh. (2):112. N

20. ___. 1932. W. C. M'Intosh. (2):112. N

21. ___. 1932. Richard P. Erwin (3):160. N

22. ___. 1932. Barton Warren Evermann. (3):160. N

23. ___. 1932. William Patten. (4):185. N

24. ___. 1933. Edwin Chapin Starks. (1):47-48. N, B, P

25. ___. 1933. N. J. Atkinson. (1):48. N

26. ___. 1933. James Johnstone. (1):48. N

27. ___. 1933. Johannes Schmidt. (1):48. N, B

28. ___. 1933. H. von W. Schulte. (1):48. N

29. ___. 1933. E. B. Williamson. (1):48. N

30. ___. 1933. A. W. Alcock. (3):156. N

31. ___. 1933. F. G. Maskell. (3):156. N

32. ___. 1933. Howard Ayers. (4):228. N

33. ___. 1933. William de Chastignier Ravenel. (4):228. N

34. ___. 1934. B. A. Bensley. (1):60. N, B

35. ___. 1934. Daniel Bacon. (2):104. N

36. ___. 1934. Fernand Lataste. (2):104. N

37. ___. 1934. Edward William Nelson. (2):104. N, B

38. ___. 1934. Robert Wilson Shufeldt. (2):104. N

39. ___. 1934. R. Owen Merriman. (3):144. N

40. ___. 1935. Chiyomatsu Ishikawa. (1):48. N

41. ___. 1935. Oliver Peebles Jenkins. (1):48. N

42. ___. 1935. J. T. Cunningham. (2):112. N

43. ___. 1935. Decio Vinciguerra. (2):112. N

44. ___. 1935. Frank J. W. Schmidt. (3):159. N

45. ___. 1935. Thomas L. Hankinson. (4):202. N

46. ___. 1935. A. P. Knight. (4):202. N

47. ___. 1936. Henry O'Malley. (2):132. N, B

48. ___. 1936. John Pease Babcock. (3):184. N

49. ___. 1936. John Alexander Stevenson. (3):184. N

50. ___. 1936. Ray Schrenkeisen. (4):244. N

51. ___. 1936. Alfred McLaren White. (4):244. N

52. ___. 1937. Jesse Earl Hyde. (1):80. N

53. ___. 1937. William Harding Longley. (1):80. N

54. ___. 1937. Max Weber. (1):80. N

55. ___. 1937. Lucy Wright Smith Clemens. (2):148. N

56. ___. 1937. Richard Crittenden McGregor. (2):148. N

57. ___. 1937. Walter Mosauer. (2):148. N

58. ___. 1937. Richard White Wehrle. (2):148. N

59. ___. 1937. Louis Pierre Giltay. (3):200. N

60. ___. 1937. Dev Dev Mukerji. (3):200. N

61. ___. 1937. Hugh D. Reed. (3):200. N

62. ___. 1937. Will Scott. (3):200. N

63. ___. 1937. Frank Stephens. (3):200. N

64. ___. 1937. F. W. Urich. (3):200. N

65. ___. 1937. Willy Wolterstorff. (4):243. B, P

66. ___. 1937. George Albert Boulenger. (4):244. N

67. ___. 1937. Junius Henderson. (4):244. N

68. ___. 1937. Ludwig Plate. (4):244. N

69. ___. 1937. P. N. van Kampen. (4):244. N

70. ___. 1938. Nicholas A. Borodin. (1):56. N, B

71. ___. 1938. John N. Lowe. (4):210. N

72. ___. 1939. Earl E. Hoover. (1):63. N, B

73. ___. 1939. Carlos Clyde Goff. (1):63-64. N, B

74. ___. 1939. George Charles Embody. (1):64. N

75. ___. 1939. William Converse Kendall. (1):64. N

76. ___. 1939. James Playfair McMurrich. (1):64. N

77. ___. 1939. Henry Van Peters Wilson. (1):64. N

78. ___. 1939. Franz Werner. (2):122. N

79. ___. 1939. William Converse Kendall. (2):122-123. B

80. ___. 1939. George C. Embody. (2):123. B

81. ___. 1939. Arthur Paul Jacot. (2):123. N

82. ___. 1939. Joseph Grinnell. (2):124. N

83. ___. 1939. Douglas D. H. March. (2):124. N

84. ____. 1939. Alipio de Miranda Ribeiro. (2):124. N

85. ____. 1939. Yojiro Wakiya. (2):124. N, B

86. ____. 1939. Henry Van Peters Wilson. (2):124. B

87. ____. 1939. James Playfair McMurrich. (3):183. B

88. ____. 1939. Joseph Grinnell. (3):184. B

89. ____. 1939. E. Victor Smith. (4):244. N

90. ____. 1940. Wilfred Welter. (1):60. N

91. ____. 1940. John F. Bass, Jr. (2):148. N

92. ____. 1940. G. K. Noble. (4):274-275. N, B, P

93. ____. 1940. Adolpho Lutz. (4):275-276. N, B, P

94. ____. 1941. Fernando Lahille. (2):124. N

95. ____. 1941. Howard Walton Clark. (3):192. N

96. ____. 1941. Howard Walton Clark. (4):278-279. B, P

97. ____. 1942. Malcolm J. Brumwell. (1):62. N

98. ____. 1943. E. J. Allen. (1):68. N

99. ____. 1943. John Franklin Daniel. (1):68. N

100. ____. 1943. Howard A. Kelly. (1):68. N

101. ____. 1943. C. Tate Regan. (1):68. N

102. ____. 1943. Louis Roule. (1):68. N

103. ____. 1943. John Otterbein Snyder. (3):204. N

104. ____. 1943. Harold Woodall. (3):204. N

105. ____. 1944. Charles Haskins Townsend. (1):68. N

106. ____. 1944. Chauncey Juday. (1):68. N

107. ____. 1944. John R. Norman. (3):196. N

108. ____. 1944. Fred Bromund. (4):266. N

109. ____. 1944. Simon Henry Gage. (4):266. N

110. ___. 1944. Arthur Smith Woodward. (4):266. N

111. ___. 1945. Stanley Stewart Morgan. (1):59. N

112. ___. 1945. Edwin H. Sincock, Jr. (2):127. N

113. ___. 1945. A. Taranets. (3):182. N

114. ___. 1945. Sergius Awerinzew. (4):239. N (but see 1947 (1):73.)

115. ___. 1945. A. I. Berezovsky. (4):239. N

116. ___. 1945. Clifford A. Goodnoh, Jr. (4):239. N

117. ___. 1945. V. K. Soldatov. (4):239. N

118. ___. 1945. A. J. Taranetz. (4):239. N

119. ___. 1946. Captain Nellemose. (1):54. N

120. ___. 1946. H. C. Redeke. (1):55. N

121. ___. 1946. Stanley Smythe Flower. (1):56. N

122. ___. 1946. E. G. Boulenger. (3):182. N

123. ___. 1946. Ulric Dahlgren. (3):183. N

124. ___. 1946. Mrs. Hugh M. Smith. (3):183. N

125. ___. 1946. A. Taranetz. (3):184. N

126. ___. 1947. William Perry Hay. (1):75. N

127. ___. 1947. Rosa Smith Eigenmann. (1):75-76. N, B

128. ___. 1947. Otto Cyren. (1):76. N

129. ___. 1947. Hubert Lyman Clark. (3):215. N

130. ___. 1947. Georg Surbeck. (3):216. N

131. ___. 1947. W. E. Allen. (4):294. N

132. ___. 1947. Edward Phelps Allis, Jr. (4):295. N

133. ___. 1948. Ernst Ehrenbaum. (1):75. N

134. ___. 1948. Aden C. Bauman. (1):76. N

135. ___. 1948. A. T. Cameron. (1):76. N

136. ____. 1948. T. D. A. Cockerell. (1):76. N

137. ____. 1948. Grace Eager. (1):76. N

138. ____. 1948. Grace Olive Wiley. (3):231. N

139. ____. 1949. Samuel F. Hildebrand.(1):87. N

140. ____. 1949. Vladimir V. Tchernavin. (3):236. N

141. ____. 1950. C. O. (P.) J. De Haas. (1):71. N

142. ____. 1950. Thaddeus Surber. (1):71. N

143. ____. 1950. Fernand Angel. (3):252. N

144. ____. 1950. Colonel Frank Wall. (3):252. N

145. ____. 1950. Rodgers D. Hamilton. (4):329. N

146. ____. 1950. Hans Theodor Rust. (4):329. N

147. ____. 1951. Leo S. Berg. (1):112. N

148. ____. 1951. Brayton Eddy. (1):112. N

149. ____. 1951. Lars Gabriel Andersson. (2):184. N

150. ____. 1951. Sherman C. Bishop. (2):184. N

151. ____. 1951. Karel Schäferna. (2):184. N

152. ____. 1951. H. E. Ewing. (3):256. N

153. ____. 1951. Southgate Y. Hoyt. (3):256. N

154. ____. 1951. George Milton Smith. (3):256. N

155. ____. 1951. Harald Blegvad. (4):324. N

156. ____. 1951. Peter J. Schmidt. (4):324. N

157. ____. 1952. Percy S. Barnhart. (1):58. N

158. ____. 1952. J. Louis Troemner. (1):58. N

159. ____. 1952. Gus A. Engeling. (1):59. N

160. ____. 1952. Hans Lübbert. (2):125. N

161. ____. 1952. James Nelson Gowanloch. (3):221. N

162. ___. 1952. Erich Wagler. (4):289. N

163. ___. 1953. Alfred Weller. (2):132. N

164. ___. 1953. Max M. Ellis. (4):254. N

165. ___. 1954. Alfred Cleveland Weed, 1881-1953. (2):163-164. N, B, L

166. ___. 1954. Georg Duncker. (2):168. N

167. ___. 1954. J. E. Johnson, Jr. (3):248. N

168. ___. 1955. Colonel Martin Lalor Crimmins. (2):158. N

169. ___. 1955. William Ray Allen. (4):325. N

170. ___. 1956. Raymond C. Osburn. (1):74. N

171. ___. 1956. Emmett Reid Dunn. (2):137-138. N

172. ___. 1956. Léon Bertin. (2):138. N

173. ___. 1956. E. W. Gudger. (2):138. N

174. ___. 1957. Viktor Pietschmann. (4):331. N

175. ___. 1957. K. P. Schmidt. (4):331. N

176. ___. 1959. A. Vedel Tåning. (1):86. N

177. ___. 1959. Paul Chabanaud. (2):184. N

178. ___. 1959. Myron Gordon. (2):184-185. N

179. ___. 1959. Fritz Mayer. (2):185. N

180. ___. 1959. Richard D. Miller. (2):185. N

181. ___. 1959. J. R. Pfaff. (2):185. N

182. ___. 1959. Norman B. Scofield. (2):185. N

183. ___. 1959. Moichiro Maki. (3):272. N

184. ___. 1960. Bela Hanko. (2):164. N

185. ___. 1960. Richard B. Miller. (2):164. N

186. ___. 1960. Paul S. Welch. (2):164. N

187. ____. 1960. August Thienemann. (4):391. N

188. ____. 1960. Roy Chapman Andrews. (4):395. N

189. ____. 1960. William M. Mann. (4):395. N

190. ____. 1960. Margaret H. Storey. (4):395. N

191. ____. 1961. Dr. Brian Curtis. (2):260. N

192. ____. 1961. Dr. Peter O. Okkelberg. (2):260. N

193. ____. 1961. Dr. T. C. Roughley. (2):261. N

194. ____. 1961. William M. Mann. (3):368 N

195. ____. 1961. Donald R. Crawford, Sr. (4):519. N

196. ____. 1961. George Vanderbilt. (4):519. N

197. ____. 1962. A. F. Bruun. (1):251. N

198. ____. 1962. Albert W. Herre. (1):251. N

199. ____. 1962. Percy Viosca, Jr. (1):251. N

200. ____. 1963. Bernhard Peyer. (1):223. N

201. ____. 1963. Paul Anderson. (2):472. N, B

202. ____. 1963. Dr. L. Glauert. (4):723. N

203. ____. 1964. Dr. S. A. Chernov. (1):255. N

204. ____. 1964. Norman E. Hartweg. (1):256. N

205. ____. 1964. Robert Snedigar. (1):256. N, B

206. ____. 1964. Fannye A. Cook. (3):598. N

207. ____. 1964. Paul R. Needham. (3):598. N

208. ____. 1965. Umberto d'Ancona. (1):124. N

209. ____. 1965. Dr. K. H. Barnard. (1):124. N

210. ____. 1965. Wilbert A. Clemens. (1):124. N

211. ____. 1965. D. Dwight Davis. (1):124. N, B

212. ____. 1965. John Richardson Dymond. (1):124. N

213. ___. 1965. Colonel John K. Howard. (2):262. N, B

214. ___. 1965. Bernard S. Greenberg. (3):399. N, B

215. ___. 1965. Paulo de Miranda Ribeiro. (4):543. N

216. ___. 1966. Albert Moore Reese. (2):380. N

217. ___. 1966. John Van Ooster. (2):381-382. N

218. ___. 1967. Dr. Hermann Einarsson. (2):503. N

219. ___. 1967. Jerzy Michałowski. (2):503. N

220. ___. 1968. Dr. Helge Volsøe. (3):663. N

221. ___. 1969. Dr. William J. Steyn. (2):422-423. N

222. ___. 1969. Dr. Robert L. Hass. (2):423. N

223. ___. 1970. Gualter Adolpho Lutz. (3):598. N

224. ___. 1970. F. J. Mitchell. (3):598. N

225. ___. 1971. Michael M. Ovchynnyk. (1):194. N

226. ___. 1971. Alexander Grant Ruthven (1882-1971). (3):587. N

227. ___. 1971. Tanzer Memorial Fund (Ernest C. Tanzer). (3):588. N

228. ___. 1971. Madam D. Schachter. (4):768. N

229. ___. 1972. Charles E. Shaw. (1):206. N

230. ___. 1972. William C. Starrett. (1):206. N

231. ___. 1972. Don L. Frizzell. (4):906. N

232. ___. 1972. Oscar Elton Sette. (4):906. N

233. ___. 1973. Hobart Landreth. (3):639. N

234. ___. 1973. James R. Templeton. (3):639. N

235. ___. 1973. Lewis H. Babbitt. (4):831. N

236. ___. 1977. Isabelle Conant. (1):209-210. N, B

237. ___. 1977. George W. Bennett. (3):614. N

238. ___. 1978. Donald F. Hansen. (2):380. N

239. ___. 1978. Edward Harrison Taylor. (3):557. N

240. ___. 1978. John T. Greenbank. (4):740. N

241. ___. 1979. Charles F. Walker. (2):382. N

242. ___. 1979. Roger J. Reed. (4):757. N

243. ___. 1980. Ethelwynn Trewavas. (4):952. B

244. ___. 1981. Charlotte F. Raney. (3):749. N

245. ___. 1983. Jack A. Ward. (1):285. N

246. ___. 1983. Luis Howell Rivero. (2):582-583. N

247. ___. 1983. Lawrence C. Stuart. (3):853-854. N

248. ___. 1984. Thomas M. Zaret. (4):1042. N

249. ___. 1985. Wu Hsien-Wen. (4):1087. N

250. Atz, James W. 1968. John Tee-Van, July 6, 1897-November 5, 1967. (3)660-661. N, B

251. ___. 1977. Robert W. Harrington, Jr., 1911-1975. (1):204-205.N, B, P

252. ___. 1986. C. M. Breder, Jr., 1897-1983. (3):853-856. N, B, P

253. ___, and Donn E. Rosen. 1959. Myron Gordon, 1899-1959. (4):352-354. B, P

254. Bailey, Joseph R. 1977. Helen Thompson Gaige; Frederick MacMahon Gaige, 1890-1976. (3):609-611. N, B, P

255. ___. 1979. Bernard S. Martof. (2):380-381. N, B

256. Bailey, Reeve M. 1984. Gerald Paul Cooper. (4):1042-1043. N, B, P

257. Barbour, Roger W. 1985. Robert Andrew Kuehne, 1927-1984. (2):528-529. N, B, P

258. Barbour, Thomas. 1931. To Leonhard Stejneger. (3):73. P

259. ___. 1943. Leonhard Stejneger. (1):1. N, P

260. Bartsch, Paul. 1941. Dr. Hugh M. Smith, director of the Philippine Cruise of the "Albatross." (4):209-215. B

261. Berra, Tim M. 1988. Gloria Hollister, 1900-1988. (4):1113. N, B, P

262. Berry, Fred. 1988. Vladimir Walters, 1927-1987. (4):1112-1113. N, B, P

263. Black, Jeffrey Howard, and Charles C. Carpenter. 1969. Arthur Norris Bragg, 18 December 1897-27 August 1968. (2):419-420. N, B, P

264. Boeseman, M. 1969. Lieven Ferdinand de Beaufort, 1879-1968. (1):221-222. N, B, P

265. ___. 1977. Frederick P. Koumans, 1905-1977. (4):802. N, B, P

266. Brattstrom, Bayard H. 1977. Raymond Bridgman Cowles, 1896-1975. (3):611-612. N, B, P

267. Burr, Brooks M., and Lawrence M. Page. 1987. Philip Wayne Smith, 1921-1986. (3):839-840. N, B, P

268. Cagle, Fred R. 1950. Edward Avery McIlhenny. (3):245-246. N, B

269. Case, E. C. 1940. Cope- The man. (2):61-65. B, P

270. Chernoff, Barry. 1988. Frances Voorhees Hubbs Miller, 1919-1987. (2):520-523. N, B, P

271. Clay, William M. 1979. Howard Kay Gloyd (1902-1978). (1):187-189. N, B, P

272. Cohen, Daniel M., and Stanley H. Weitzman. 1986. George Sprague Myers, 1905-1985. (3):851-853. N, B, P

273. Colbert, Edwin H. 1986. Coleman J. Goin, 1911-1986. (4):1041-1043. N, B, P

274. Collette, Bruce B. 1973. James A. Peters. (2):388-390. N, B, P

275. ___. 1986. Sally Leonard Richardson, 1944-1986. (4):1043-1045. N, B, P

276. Conant, Roger. 1966. Henry Weed Fowler, 1878-1965. (3):628-629. N, B, P

277. ___. 1984. William Marion Clay, 1906-1983. (2):563. N, B

278. Crossman, E. J. 1980. Eugene Bernard Shelley Logier. (3):572-574. N, B, P

279. Darevsky, Ilya S., and Leo I. Khosatzky. 1971. Paul V. Terentjev (1903-1970). (2):382-384. N, B, P

280. Davis, D. Dwight. 1959. Karl Patterson Schmidt, 1890-1957. (3):188-192. B, P

281. Davis, Harry T. 1946. Clement Samuel Brimley. (3):182. N, B

282. Dessauer, H. C. 1965. Wade Fox, Jr., 1920-1964. (1):123. N, B, P

283. Dick, Myvanwy M. 1974. Alfred Sherwood Romer, 1884-1973. (1):293-294. N, B

284. ___. 1977. William C. Schroeder. 1894-1977. (2):412-413. N, B

285. ___, and William C. Schroeder. 1968. Henry Bryant Bigelow, 1879-1967. (3):657-659. N, B, P

286. Duellman, William E. 1978. Edward Harrison Taylor, 1889-1978. (4):737-738. N, B, P

287. ___. 1983. Laurence Cooper Stuart. (4):1116-1118. B, P

288. Dundee, Harold A. 1976. George P. Meade. (1):220-221. N, B

289. Dunn, Emmett R. 1946. Thomas Barbour, 1884-1946. (1):1-3. N, B, P

290. Ebeling, A. W. 1976. Klaus Günther, 1907-1975. (4):845. N, B

291. Ehrenfeld, David. 1987. Archie F. Carr, Jr., 1909-1987. (4):1087-1089. N, B, P

292. Evermann, Barton Warren. 1930. David Starr Jordan, the man. (4):93-105. B, P

293. ___. Fink, William L. 1987. Luis Rene Rivas, 1916-1986. (1):269-271. N, B, P

294. Fisher, Albert Kendrick. 1931. Leonhard Stejneger. (3):74 83. B, P

295. ___. 1943. Leonhard Stejneger. (3):137-141. B

296. Fowler, Henry W. 1930. David Starr Jordan and ichthyology in the Pacific. (4):108-109. B

297. ___. 1959. John Treadwell Nichols, 1883-1958. (1):83. N, B

298. ___. 1963. Cope in retrospect. (1):195-198. B

299. Freytag, Gunther. 1947. Dr. Willy Wolterstorff. (3):215. N, B

300. Gans, Carl. 1976. Robert Mertens, 1894-1975. (2):420. N, B

301. Goin, Coleman J. 1968. Doris Mable Cochran, May 18, 1898-May 22, 1968. (3):661-662. N, B, P

302. Gorbman, Aubrey. 1965. Charles W. Creaser. (3):398-399. N, B

303. Grandison, Alice G. C. 1969. H. W. Parker. (2):416-417. N, B, P

304. Gregory, W. K. 1937. David Watson. (3):197. B, P

305. Grobman, Arnold B. 1952. Sherman C. Bishop, 1887-1951. (3):127-128. B, P

306. Guerard, Albert. 1926. Eric Knight Jordan, 1903-1926.(152):suppl. N, B

307. Guibe, J. 1951. Fernand Angel, 1881-1950. (1):1-2. B, P

308. Hamilton, Jr., W. J. 1965. Mrs. Anna A. Wright. (1):124. N, B

309. ___. 1971. Albert Hazen Wright, August 15, 1879-July 4, 1970. (2):381-382. N, B, P

310. Hanna, G Dallas. 1932. Barton Warren Evermann, 1853-1932. (4):161-162. B, P

311. ___. 1954. Harry C. Fassett. (2):167. N

312. Heemstra, Phillip C., and Michael N. Bruton. 1988. Margaret Mary Smith, 1916-1987. (2):523-525. N, B, P

313. Hellmich, Walter. 1953. Lorenz Müller, 1868-1953. (3):133-134. N, B, P

314. Herre, Albert W. 1959. Alvin Seale, 1871-1958. (1):85-86. N, B

315. Higgins, Elmer. 1950. Samuel F. Hildebrand as a government scientist. (1):8-11. B

316. Hildebrand, Samuel F. 1941. Hugh McCormick Smith and the Bureau of Fisheries. (4):216-220. B, P

317. Hubbs, Carl L. 1943. John O. Snyder. (4):265-266. B, P

318. ___. 1945. Francis B. Sumner, 1874-1945. (4):183-184. N, B, P

319. ___. 1950. Samuel F. Hildebrand, ichthyologist and herpetologist. (1):12-14. B, P

320. ___. 1950. Einar Lönnberg. (1):70. N

321. ___. 1960. Dr. Otto Schindler. (3):269. N, B

322. ___. 1960. Conrad Limbaugh. (3):269-270. N, B, P

323. ___. 1962. Anton Frederick Bruun. (2):481-482. B, P

324. ___. 1962. Fernando de Buen. (4):875-876. N, B, P

325. ___. 1963. Vilhelm Ege. (1):220-222. N, B, P, L

326. ___. 1963. Al Pflueger. (1):223. N

327. ___. 1963. Gunnar Alm. (1):224. N

328. ___. 1965. William Francis Thompson. (4):542. N, B

329. ___. 1965. David H. Davies. (4):543. N, B

330. ___. 1968. James Leonard Brierley Smith, 1897-1968. (3):659-660. N, B, P

331. ___. 1969. Kiyomatsu Matsubara, 1907-1968. (2):420-422. N, B, P

332. ___. 1969. Erna Mohr, July 11, 1894-September 10, 1968. (3):646. N, B, P

333. ___. 1969. Clarence Lester Turner, 1890-1969. (3):646-647. N, B

334. ___. 1971. David S. Shetter, 1910-1970. (1):194. N

335. ___. 1973. Yoshikazu Shiraishi. (2):393-394. N, B

336. ___. 1975. Shigeho Tanaka, 1878-1974. (4):792. N, B, P

337. ___. 1976. Deogracias V. Villadolid, 1896-1976. (3):617. N

338. ___. 1977. Frederick Hans Stoye, 1887-1977. (3):615-616. N, B, P

339. ___, and Katsuzo Kuronuma. 1977. Yaichiro Okada, 1892-1976. (1):206-207. N, B, P, L

340. ___, and Karl F. Lagler. 1942. Jacob Reighard, 1861-1942. (1):63-64. N, B, P

341. Hubbs, Clark. 1985. William Franklin Blair, 1912-1984. (2):529-531. N, B, P

342. Hubbs, Laura C. 1974. List of students whose PhD degree was under the chairmanship of Carl L. Hubbs through 1974. (3):609-610.

343. Inger, Robert F. 1974. Clifford H. Pope. (4):1012. N, B

344. Kelly, Douglas E. 1967. Victor Chandler Twitty, November 5, 1901-March 22, 1967. (4):887-888. N, B, P

345. Kennedy, J. P. 1977. Bertha Lutz, 1874-1976. (1):208-209. N, B

346. Kluge, Arnold. 1980. Donald W. Tinkle (1930-1980). (3):572. N, B, P

347. Kuehne, Robert A. 1972. Dr. Heinz Steinitz, 1909-1971. (3):609-610. N, B, P

348. Leviton, Alan E. 1964. Sergius Alexandrovich Chernov, 1903-1964. (2):466. B, P

349. Liner, Ernest A. and Allan H. Chaney. 1982. Richard M. Johnson. (4):987. N, B

350. Loveridge, A. 1953. Harold Lester Babcock, 1886-1953. (3):134-135. N, B

351. Mann, William M. 1931. Joan Proctor. (4):166. N, B

352. Merriman, Daniel. 1938. Peter Artedi-Systematist and ichthyologist. (1):33-39. B

353. Miller, Frances H., Clark Hubbs, and Earl L. Hubbs. 1979. Carl L. Hubbs. (4):756. N, P

354. Miller R. C. 1959. Joseph Richard Slevin, 1881-1957. (1):84-85. N, B, P

355. Miller, Robert Rush. 1985. Karl F. Lagler, 1912-1985. (4):1090-1091. N, B, P

356. Myers, George S. 1939. Alipio de Miranda Ribeiro. (3):184. B

357. ___. 1940. Cope as an ichthyologist. (2):76-78. B, P

358. ___. 1952. Chloe Leslie Starks. (2):124-125. N

359. ___. 1961. Margaret Hamilton Storey (1900-1960). (2):261-263. B, P, L

360. ___. 1976. Isaac Ginsburg. (1):217-219. N, B, P

361. ___, W. I. Follett, and William A. Gosline. 1974. Earl Stannard Herald. (1):291-292. N, B, P

362. Nelson, Gareth, James W. Atz, Klaus D. Kallman, and C. Lavett Smith. 1987. Donn Eric Rosen, 1929-1986. (2):541-546. N, B, P, L

363. ___, and Mee-Man Chang. 1986. Erik Stensiö, 1891-1984. (2):558. N, B, P

364. Nichols, John T. 1954. E. W. Gudger. (2)164-165. B

365. Norris, Kenneth S. 1974. To Carl Leavitt Hubbs, a modern pioneer naturalist on the occasion of his eightieth year. (3):581-594. B, P

366. Parker, H. W. 1954. Louis A. Lantz. (1):79. N, B

367. Paxton, John R., and Douglass F. Hoese. 1975. Gilbert P. Whitley, 1903-1975. (4):792-793. N, B, P

368. Pefaur, Jaime E. 1976. Roberto Donoso-Barros. (1):219-220. N, B, P

369. Peters, James A. 1959. A bibliography and index of Karl P. Schmidt's papers on coral snakes. (3):192-196. L

370. Pietsch, Theodore W. 1982. Arthur Donovan Welander (1908-1982). (3):737. N, B

371. Qingwen, Meng. 1987. Zhu Yuangding (Yuanting T. Chu), 1896-1986. (3):838-839. N, B, P

372. Renaud, Claude B. 1986. Vadim Dimitrij Vladykov. (2):559-560. N, B, P

373. Ricker, W. E. 1966. Fedor Ilich Baranov. (1):147. N

374. Robins, C. Richard. 1983. James E. Böhlke. (3):850-851. N, B, P

375. Ruthven, Alexander G. 1942. Raymond L. Ditmars. (2):131. N, B

376. Schmidt, Karl P. 1937. Frank Nelson Blanchard, 1888-1937.

(3):149-150. N, B, P

377. ___. 1954. J. E. Johnson, Jr.- An appreciation. (3):247-248. B

378. ___. 1957. Emmett Reid Dunn, 1894-1956. (2):74-77. B, P

379. Schmitt, Waldo L. 1950. Samuel Frederick Hildebrand. (1):1. P

380. Schultz, Leonard P. 1930. John N. Cobb, Dean of the College of Fisheries. (2):50-51. B

381. ___. 1941. Hugh McCormick Smith. (4):194-209. N, B, P, L

382. ___. 1945. Earl Desmond Reid Retires. (2):128. B

383. ___. 1950. Samuel Frederick Hildebrand. (1):2-7. B, P

384. ___, and Ann Shepard Green. 1950. Bibliography of Samuel F. Hildebrand. (1):15-18. L

385. Scott, W. B. 1965. John Richardson Dymond, 1887-1965. (3):396-398. B, P

386. ___. 1974. John L. Hart, 1904-1973. (2):579. N, B

387. Seale, Alvin. 1930. To David Starr Jordan. (4):106-107. B, P

388. Shapovalov, Leo. 1938. Leo S. Berg. (1):55. B, P

389. ___. 1951. Leo Semenovich Berg, 1876-1950. (3):185-186. B, P

390. Shaw, Charles E. 1969. Laurence Monroe Klauber, 1883-1968. (2):417-419. N, B, P

391. Shor, Elizabeth N. 1974. Selected bibliography of Carl Leavitt Hubbs from 1915 to 1974. (3):594-609. L

392. Silas, E. G. 1956. Sunder Lal Hora. (2):134-136. N, B, P

393. Smith, Hobart M. 1984. T. Paul Maslin, 1909-1984. (3):806-807. N, B, P

394. ___, and Findlay E. Russell. 1965. Frederick Albert Shannon, 1921-1965. (4):541-542. N, B, P

395. Smith, Malcolm. 1938. George Albert Boulenger, 1858-1937. (1):1-3. B, P

396. ___. 1946. Stanley Smyth Flower, 1871-1946. (4):185-187. B, P

397. ___. 1951. Frank Wall, 1868-1950. (2):113-114. B, P

398. Soin, S. G., and M. V. Mina. 1978. G. V. Nikolsky (1910-1977). (2):379. N, B, P

399. Sonoda, Pearl M., and Robert F. Inger. 1964. Marion Grey. (3):598. N, B

400. Springer, Victor G. 1987. Leonard Peter Schultz, 1901-1986. (1):271-272. N, B, P

401. Stejneger, Leonhard. 1941. To Hugh McCormick Smith. (4):193. P

402. Szarski, Henryk. 1983. Zygmunt Grodziński. (3):851-852. N, B, P

403. ___. 1987. Juliusz Czopek, 1922-1986. (3):839. N

404. Tamsitt, J. R. 1980. Brother Niceforo Maria. (4):952-953. N, B

405. Tanner, Wilmer W. 1963. Charles E. Burt. (4):722-723. N, B, P

406. Thompson, Paul E. 1979. Lionel A. Walford. (3):564. N

407. Tinkle, Donald W. 1969. Fred Ray Cagle, 1915-1968. (1):220. N, B, P

408. ___. 1979. Charles F. Walker. (3):563-564. B, P

409. Tortonese, Enrico. 1974. Prof. Giuseppe Scortecci, 1898-1973. (1):294. N, B

410. Trewavas, Ethelwynn. 1943. Charles Tate Regan. (3):202-204. B, P

411. ___. 1944. John R. Norman. (4):265-266. B, P

412. Trueb, Linda. 1982. Theodore H. Eaton. (1):245. N, B

413. Ueyanagi, Shoji. 1972. Dr. Hiroshi Nakamura, 1906-1971. (1):204-205. N, B, P

414. Underhill, James. 1973. Samuel Eddy. (2):392-393. N, B, P

415. Van der Feen-van Benthem Jutting, W. S. S. 1964. Mrs. Dr. P. J. Breyer-de Rooy. (3):598. N, B

416. Wade, Wallace B. 1955. C. B. Perkins, 1889-1955. (4):323-324. N, B

417. Wake, David B. 1978. Tracy I. Storer and Charles L. Camp. (1):196-197. B

418. Werner, Yehudah L. 1982. Georg Haas, 1905-1981. (2):491-493. N, B, P

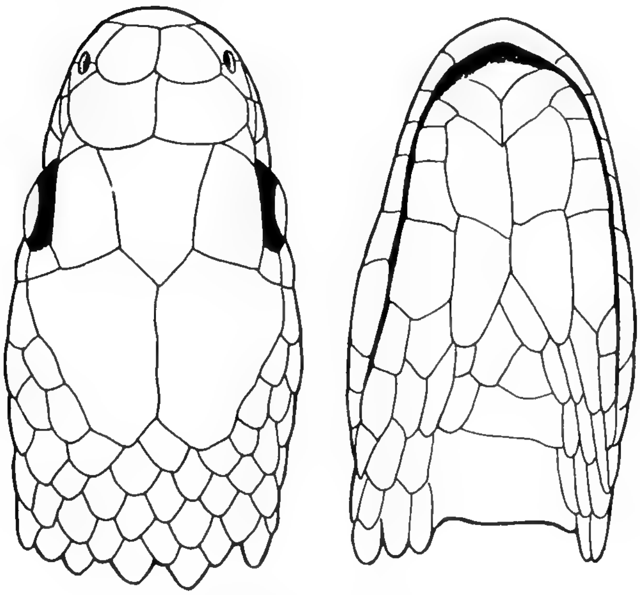
419. Wilhoft, Daniel C., and Keith A. Hawthorne. 1977. James Donald Anderson, Jr. (2):412. N, B

420. Williams, Walter J. 1933. John Kern Strecker. (1):48. N, B

421. Wright, Stillman. 1939. Rodolpho von Ihering. (4):244. B

422. Yiyu, Chen. 1986. Wu Hsien-wen, 1900-1985. (2):557-558. B, P

A KEY AND CHECKLIST TO THE NEOTROPICAL SNAKE GENUS LIOPHIS WITH COUNTRY LISTS AND MAPS



JAMES R. DIXON

Department of Wildlife and Fisheries Sciences
Texas A&M University

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 79

1989

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with us.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, U.S.A. Please include a self-addressed mailing label with requests.

INTRODUCTION

The genus Liophis currently contains 35 species and 62 recognized subspecies. About 137 names have been proposed, attesting to extensive qualitative and quantitative variation between and among the species of Liophis. The purpose of the checklist, keys, and country lists is to offer museum curators and herpetologists a means to identify the species and subspecies of one of the most commonly encountered xenodontine snake genera of the Neotropics. Species lists are constructed from specimens personally examined and verified by me. The keys resulted from an analysis of variation of 5,198 specimens of all recognized populations.

Some species have been recognized since 1758 and others as recently as 1987. Some species are represented in collections by only a few specimens (L. atraventer, L. problematicus), by several hundred (most species), or over a thousand (L. miliaris, L. poecilogyrus). Taxonomic data are generally adequate for most taxa.

The checklist contains the accepted name and its author, followed by primary synonomies, their author(s), date, page number, and type locality. The primary synonomies are followed by the author, date, and page number of the first proper usage of the epithet, if necessary for clarification. Species are arranged alphabetically. Subspecies are also arranged alphabetically under each species, except for the nominate race, which is placed first. Synonomies for subspecies follow the accepted name, arranged in alphabetical order, followed by the author(s) name(s). A statement of distribution follows the synonomy of each species and subspecies, along with a citation denoting a publication with a distribution map.

KEY TO SPECIES OF LIOPHIS

1.a Posterior dorsal scale rows at least two less than at midbody 5
b Dorsal scale rows without reduction 2

2.a Dorsal scale rows 15-15-15 3
b Dorsal scale rows 17-17-17 4

3.a Three supralabials entering orbit .... andinus
b Two supralabials entering orbit. reginae (=oligolepis of others)

4.a Eight supralabials (rarely seven); dorsum olive green with or without reddish vertebral stripe and small dorsolateral black spots .... jaegeri
b Seven supralabials; dorsum tan or brown with darker blotches and four blackish posterior lines, and a black edged, white labial stripe .... williamsi

5.a Nineteen midbody dorsal scale rows 29
b Seventeen midbody dorsal scale rows 6

6.a Dorsal scale rows 17-17-15 7
b Dorsal scale rows 17-17-13 .... flavifrenatus

7.a Seven supralabials 8
b Eight supralabials 9

8.a Light dorsal bands not widened laterally into broad triangles; ≤ 17 maxillary teeth .... breviceps
b Light dorsal bands distinctly widened laterally into broad triangles; ≥ 20 maxillary teeth .... longiventris

9.a Venter with checkered pattern of black and red or yellow 10
b Venter never checkered with black and red or yellow, but occasionally with black marks on lateral edges of ventrals 19

10.a Black lateral posterior stripe present and extends onto tail 11
b Not as above 13

11.a Apical scale pit present 12
b No scale pit .... taeniurus

12.a Posterior lateral black stripe occurs as an edge between 3rd and 4th scale rows .... reginae
b Posterior lateral black stripe occurs over most of 3rd, one-third to all of 4th and occasionally on 5th scale row .... epinephelus

13.a One preocular 14
b Two preoculars .... festae

14.a Ventrals ≤179 15
b Ventrals ≥186 .... _frenatus_

15.a Apical scale pit present, tail length ≥26% of total length 16
b Scale pit absent, tail length ≤23% of total length 17

16.a Subcaudals ≥74; ≥26 maxillary teeth .... _juliae_
b Subcaudals ≤72; ≤27 maxillary teeth .... _epinephelus_

17.a Banded dorsal pattern, occasionally a combination bands and reticulations; ventrals and subcaudals always checkered with black and red or yellow 18
b Salt and pepper dorsal pattern, obscure in Amazon populations; venter light with some dark edging in all populations except Amazon, where large black checkered marks are present; Amazon population usually with dusky throats and white subcaudals, subcaudals of other populations white or dark edged .... _miliaris_

18.a Light body bands widened laterally into broad triangles .... _longiventris_
b Light body bands of equal width .... _cobellus_

19.a Lateral edge of ventrals unmarked 20
b Lateral edge of ventrals marked with black 25

20.a Dorsum with or without posterior lateral black stripes; ≥13 maxillary teeth 21
b Dorsum with three dark lines from head to tail; ≤13 maxillary teeth .... _paucidens_

21.a Posterior lateral black stripe present on body and tail 22
b Stripe absent 23

22.a Nine infralabials; ≤21 maxillary teeth; tail length about 22% of total length .... _melanotus_
b Ten infralabials; ≥21 maxillary teeth; tail length about 26% of total length .... _reginae_

23.a Subcaudals ≥74; dorsum uniform color or variable, but never green or olive green 24
b Subcaudals ≤73; dorsum olive green or green, with or without reddish dorsal stripe and small dorsolateral black spots .... _jaegeri_

24.a Ventrals ≤167 .... _juliae_
b Ventrals ≥182 .... _perfuscus_

25.a Dorsum without dark stripes 26
b Dorsum with dark stripes 28

26.a Tail length ≥26% of total length 27
b Tail length ≤23% of total length .... miliaris

27.a Subcaudals ≤93 .... ornatus
b Subcaudals ≥96 .... cursor

28.a Dorsum with three dark and two yellow stripes, yellow stripes begin on snout .... flavifrenatus
b Dorsum with three to five dark stripes, yellow stripes absent .... triscalis

29.a Dorsal scale rows 19-19-17 30
b Dorsal scale rows 19-19-15 or 19-19-13 39

30.a Dorsum uniform green or olive green, occasionally with an ill-defined reddish brown mid-dorsal stripe 31
b Dorsum variable, but never uniform or with an ill-defined reddish mid-dorsal stripe 33

31.a Ventrals ≤159 32
b Ventrals ≥169 .... viridis

32.a Venter rose or red; ≥62 subcaudals; ≥25 maxillary teeth .... maryellenae
b Venter black; ≤56 subcaudals; ≤24 maxillary teeth .... atraventer

33.a One preocular 34
b Two preoculars .... festae

34.a Dorsum uniform brown or with two to five dark lines on a tan to light brown ground color 35
b Dorsum gray or olive, with or without dark irregular marks scattered throughout; or dorsum brown to dark brown with large blotches or bands anteriorly 37

35.a Dorsum tan or light brown with three to five distinct dark stripes, the median stripe beginning on the snout or the nape 36
b Dorsum uniform brown, with or without dark freckles and a dark ventrolateral line .... sagittifer

36.a Dorsum tan or light brown with three distinct black lines, the median line beginning on the snout, $\geq$159 ventrals; $\geq$77 subcaudals; tail/total length ratio (males) $\geq$.24 .... _lineatus_

b Dorsum light brown with a broad dark median stripe, narrow dark dorsolateral stripes, and dark ventrolateral stripes; median stripe begins on the nape; ventrals 133, subcaudals 36, tail/total length ratio .185 (known only from the male holotype) .... _problematicus_

37.a Dorsum gray or tan with darker blotches, no black dorsolateral line posteriorly; faint to moderately distinct dorsolateral light line posteriorly; dorsal surface of head gray, tan or brown with or without a whitish U,V,X, or Y mark on the parietals with exterior black edging, the mark may extend anteriorly to the internasals; with or without one apical scale pit 38

b Dorsum dark brown or chocolate brown, banded or blotched anteriorly with contrasting dorsolateral black and white lines posteriorly; no apical scale pit .... _taeniurus_

38.a Dorsal surface of frontal and parietals of head gray, brown, or olive, with or without a few darker flecks; no apical scale pit present (characters from type description) .... _carajasensis_

b Dorsal surface of frontal and parietal scales of head gray, brownish or live, with a whitish U, V, X, or Y mark with exterior black edging, mark may extend onto the internasals; one apical scale pit present .... _almadensis_

39.a Dorsal scale rows 19-19-15 40

b Dorsal scale rows 19-19-13 .... _perfuscus_

40.a Dorsum bright green; head occasionally blue, with or without dark chevrons dorsally and/or laterally 41

b Dorsum variable but never green 42

41.a Ventrals $\leq$168 .... _typhlus_

b Ventrals $\geq$187 .... _guentheri_

42.a Dorsum with black and/or yellow longitudinal stripes............ 43

b Dorsum variable but without stripes.............................. 46

43.a Dorsum blotched, ground color olive or brown, with darker blotches above and below narrow yellow paravertebral lines 45
b Dorsum striped, ground color tan or light brown, with three black stripes, or three black and two yellow stripes, the median stripe beginning on the snout 44

44.a Dorsum with three dark and two narrow yellow stripes, yellow stripes and median dark stripe begin on snout .... meridionalis
b Dorsum with three wide black stripes, median black stripe begins on snout .... dilepis

45.a Ventrals ≤166; maxillary teeth 13-17 .... anomalus
b Ventrals ≥176; maxillary teeth 18-20 .... vanzolinii

46.a Dorsum uniform or variable, but never as below 47
b Dorsum tan or yellowish, with four rows of rounded black, reddish, or reddish brown spots, lateral row of spots smaller than paravertebral row ....sagittifer (see 35)

47.a Dorsum blotched or with squarish spots 48
b Dorsum uniform brown to chocolate brown .... perfuscus

48.a Head gray to black, occasionally with light or dark markings, but never red, no middorsal reddish stripe, and generally without rounded black, intercalary spots 49
b Head black, spotted with red; dorsum with large paravertebral black blotches on olive ground color, rounded lateral black intercalary spots, broad diffuse median ruddy stripe from head to tail, frequently invaded by dorsolateral black spots .... elegantissimus

49.a Ground color usually gray or tan with a broad whitish dorsolateral line from midbody to tail on scale rows 4, 5 and 6, or 5 and 6;body with small squarish blotches slightly to moderately darker than ground color; venter checkered with black and some shade of pink or red maxillary teeth 19-25 (mode 21-22); diameter of eye 56-78% ($\bar{x}$= 66%) of snout length .... Liophis sp.

b Ground color usually brown to almost black, one subspecies with an ill-defined, posterior dorsolateral whitish stripe on scale rows 5 and 6. Head usually uniform brown or black; if brown, cephalic scales edged with black; dorsal color pattern highly variable, from salt and pepper pattern to blotches, bands, reticulations or combinations of the above and in many colors; venter from immaculate white to almost black. Maxillary teeth 13-21 (mode 17-18); diameter of eye 41-66% ($\bar{x}$= 54%) per cent of snout length .... poecilogyrus

GENUS LIOPHIS Wagler, 1830:187

Liophis almadensis (Wagler)

Natrix almadensis Wagler 1824:30. Type locality: Almada, Bahia, Brasil.
Natrix almada Wagler 1824:30. (as above)
Liophis conirostris Günther 1854:46. Type locality: Brasil and Bahia.
L. (iophis) verecundus Jan 863:300. Type locality: unknown.
Liophis wagleri Jan 1863:297. Type locality: Brasil and Bahia.
Liophis (Lygophis) y-graecum Peters 1882:129. Type locality: Villa de Guaratinqueta, São Paulo (Brasil).
Trigonocephalus scolecomorphus Bacque 1906:116. Type locality: Asuncion, Paraguay.
Liophis almadensis Wagler 1830:188.

DISTRIBUTION: Chaco Boreal plant formation of Bolivia, all plant formations of Brazil except for Caatinga and Amazon rainforest; Paraguay except for cropland situations in central Paraguay. (published reports of this taxon from the state of Misiones, Argentina, have not been verified).

SUBSPECIES: none described; possibly one undescribed cryptic subspecies in Argentina and western Bolivia.

Liophis andinus Dixon

Liophis andinus Dixon 1983:129. Type locality: Incachaca, 2500 m, Cochabamba, Bolivia.

DISTRIBUTION: Known only from the type locality (Figure 2, p. 118, Dixon, 1983).

Liophis anomalus (Günther)

Coronella anomala Günther 1858:37. Type locality: banks of the Río Paraná.
Lygophis rutilis Cope 1862:80. Type locality: Río Tígre, a tributary of the Río Paraná, Paraguay.
Coronella pulchella Jan 1863:251. Type locality: Buenos Aires, Argentina.
Liophis anomala Amaral 1925:7.

DISTRIBUTION: Southern South America, from northwestern Argentina (Salta) east-southeast through Uruguay to Pôrto Alegre, Brasil, south to the province of Buenos Aires, Argentina.

Liophis atraventer Dixon and Thomas

Liophis atraventer Dixon and Thomas 1985:260. Type locality: Boracéia, São Paulo, Brasil.

DISTRIBUTION: Known only from the type locality (= Estação Biologica da Boracéia) (figure 4, p. 188, Dixon, 1987).

Liophis breviceps Cope

Liophis breviceps Cope 1860:252. Type locality: Suriname.
Liophis canaima Roze 1957:188. Type locality: Río Ugueto, Amazonas, Venezuela.

DISTRIBUTION: Eastern flanks of the Andes of Ecuador and Perú, eastward to Obidos, Brasil; on the north from central Colombia and northern Guyana south to Río Mamoré (Trinidad) Bolivia, and Posto Diuarum, Brasil.

SUBSPECIES: Two.

1.a Ventrals ≤169 .... breviceps breviceps
b Ventrals ≥176 .... breviceps canaimus

Liophis breviceps breviceps Cope 1862:252. Type locality: Suriname.

DISTRIBUTION: Forested parts of the Amazon Basin in Bolivia, Brasil, Colombia, Perú, and similar areas in French Guiana, Guyana, Suriname, and Venezuela (see figure 3, p. 154, Dixon 1983).

Liophis breviceps canaima Roze 1957:188. (see above)

DISTRIBUTION: Known only from the region of the Río Ugueto, Amazonas, Venezuela (see figure 3, p. 154, Dixon 1983).

Liophis carajasensis Cunha, Nascimento and Avila-Pires

Liophis carajasensis Cunha, Nascimento and Avila-Pires 1985:53. Type locality: Campo Rupestre d. N 1, Serra Norte, Pará, Brasil.

DISTRIBUTION: Known only from the type locality (see figure between pp. 18 & 19, Cunha, et al 1985).

Liophis cobellus (Linnaeus)

Coluber cobella Linnaeus 1758:218. Type locality: America.
Coluber serpentinus Daudin 1803:87. Type locality: none given.
Coluber cenchrus Daudin 1803:292. Type locality: Asia.
Liophis taeniogaster Jan 1863:292. Type locality: Brasil and South America.
Liophis trebbaui Roze 1958:262. Type locality: Auyán Tepuí, Bolívar, Venezuela.
Liophis ingeri Roze 1958:303. Type locality: Chimantá Tepuí, Bolivar, Venezuela.

DISTRIBUTION: From Villavicencio, Colombia, south to Buenavista, Bolivia, and from Trinidad and Carapito, Venezuela, southeast to Bahia, Brasil.

SUBSPECIES: Four.

1.a Ventrals ≥171 .... cobellus ingeri
b Ventrals ≤164 2

2.a Ventral black bands ≥ 45 .... cobellus cobellus
b Ventral black bands ≤ 38 3

3.a Ventrals vary from 130-147 ($\bar{x}$= 138.4) .... cobellus dyticus
b Ventrals vary from 143-164 ($\bar{x}$= 151.6) ..... cobellus taeniogaster

Liophis cobellus cobellus (Linnaeus) 1758:292.

SYNONYMS: serpentinus Daudin, cenchrus Daudin.

DISTRIBUTION: Eastern Guyana Shield, exclusive of Venezuela Tepuí system; also Trinidad (see figure 4, p. 158, Dixon 1983).

Liophis cobellus dyticus Dixon 1983:159. Type locality: Monte Carmelo (= Requena), Loreto, Perú.

DISTRIBUTION: Western Amazon Basin, from Loma Linda, Colombia, south to Buenavista, Bolivia, east to Pôrto Velho, Brasil (see figure 4, p. 158, Dixon 1983).

Liophis cobellus taeniogaster Jan 1863:292. (see above)

DISTRIBUTION: Northeast Brasil, from Isla Bananal, east to central Bahia, north to Rio Amazonas (south bank) (see figure 4, p. 158, Dixon 1983).

Liophis cobellus trebbaui Roze 1958:262.

SYNONYM: ingeri Roze.

DISTRIBUTION: Known only from the Chimantá and Auyán Tepuís, and km marker 144 of the El Dorado-Santa Elena highway, Bolívar, Venezuela (see figure 4, p. 158, Dixon 1983).

Liophis cursor (Lacépède)

Coluber cursor Lacépède 1789:96. Type locality: Martinique.
Coluber fugitivus Donndorf 1798:206. Type locality: Martinique.
Liophis putnami Cope 1862:78. Type locality: Martinique.
Liophis cursor andreoides Werner 1924:36. Type locality: Grenada.

DISTRIBUTION: Known only from the island of Martinique, West Indies (see figure 1, p. 297, Dixon 1981).

Liophis dilepis (Cope)

Lygophis dilepis Cope 1862:348. Type locality: Paraguay.
Liophis dilepis, Dixon 1980:7.

DISTRIBUTION: From northeast Brasil, south to southern Brasil, and Paraguay, extending northwest to southern Bolivia (see figure 1, p. 4, Michaud and Dixon 1987).

Liophis elegantissimus (Koslowsky)

Rhadinaea elegantissima Koslowsky 1895:115. Type locality: Sierra de la Ventana, Province of Buenos Aires, Argentina.
Liophis elegantissimus, Amaral 1925.

DISTRIBUTION: Known from five localities within the Sierra de la Ventana, Buenos Aires, Argentina (see figure 1, p. 566, Dixon 1985).

Liophis epinephelus Cope

Liophis epinephelus Cope 1862:78. Type locality: Truando, Colombia.
Liophis reginae albiventris Jan 1863:294. Type locality: Western Andes of Ecuador (fra Lacutunga e Guayaquil) (= Latacunga?).
Liophis reginae quadrilineata Jan 1863:295. Type locality: Ecuador.
Ophimorphus alticolus Cope 1868:102. Type locality: Quito Valley, Ecuador.
Zamensis ater Günther 1872:22. Type locality: Biscra, Algeria (in error).
Liophis fraseri Boulenger 1894:131. Type locality: Western Ecuador.
Liophis bimaculatus Cope 1899:71. Type locality: Colombia.
Liophis bipraeocularis Boulenger 1903:351. Type locality: Facatativa, Colombia.
Liophis opisthotaenia Boulenger 1908:114. Type locality: Mérida, Venezuela.
Liophis pseudocobella Peracca 1914:99. Type locality: Angelópolis, Colombia.
Liophis cobella alticolus Amaral 1931:87. Type locality: Jericó, Colombia.
Liophis taeniurus juvenalis Dunn 1937:213. Type locality: San Jose, Costa Rica.
Liophis bimaculatus lamonae Dunn 1944:486. Type locality: Sonsón, Antioquia, Colombia.
Liophis epinephelus ecuadorensis Laurent 1949:8. Type locality: Ecuador.

DISTRIBUTION: Trans-Andean South America from Venezuela to Perú; Cis-Andean South America at and above 2,200 m in Ecuador and Perú; also Central America from central Costa Rica through Panamá (see figures 1, 2, and 3, pp. 133-135, Dixon 1983).

SUBSPECIES: Eight.

1.a	Lateral black tail stripe absent, dorsal and ventral surfaces of body and tail alternately marked with red and black	2
b	Lateral black tail stripe present, dorsum may be banded, spotted, flecked, or almost unicolor, belly checkered with black or not	3
2.a	Subcaudals ≤ 54 .... *epinephelus pseudocobellus*	
b	Subcaudals ≥ 54 .... *epinephelus juvenalis*	
3.a	Ventrals ≤ 165	4
b	Ventrals ≥ 165 .... *epinephelus bimaculatus*	

4.a Anterior half of dorsum with or without black flecks, streaks, or dark spots, never banded in adults; ventrals $\geq$143 5
b Anterior fourth of dorsum banded with black or brownish black bands, venter immaculate white, yellow or reddish; ventrals $\leq$143 .... epinephelus epinephelus

5.a Venter immaculate white, yellow or pinkish 6
b Venter checkered with marks of yellow and black 7

6.a Dorsum leaf green with flecks of black, posterior dorsolateral black stripe usually absent .... epinephelus albiventris
b Dorsum olive, olive brown, or grayish brown, posterior dorsolateral black stripe usually present .... epinephelus opisthotaenius

7.a Ventrals from 141-156 ($\bar{x}$= 150), subcaudals from 51-67 ($\bar{x}$= 59) .... epinephelus lamonae
b Ventrals from 151-164 ($\bar{x}$= 157), subcaudals from 61-76 ($\bar{x}$= 67)............................ epinephelus fraseri

Liophis epinephelus epinephelus Cope 1862.

DISTRIBUTION: Lower elevations of the mountains of western Panamá, east to Colombian lowlands, most interAndean valleys below 1,500 m, extending southward along the Colombian coast to northern Ecuador (see figures 1-3, pp. 133-135, Dixon 1983).

Liophis epinephelus albiventris Jan 1863.

SYNONYMS: alticolus Cope, ater Günther, quadrilineatus Jan

DISTRIBUTION: Western Ecuador from sealevel to 2,600 m elevation (see figure 3, p. 153, Dixon 1983).

Liophis epinephelus bimaculatus Cope 1899.

SYNONYMS: bipraeocularis Boulenger, ecuadorensis Laurent

DISTRIBUTION: High Andean slopes (2,600 - 3,300 m) of western Venezuela, central Colombia, south to northern Perú (see figures 2, 3, p. 134, 135, Dixon 1983).

Liophis epinephelus fraseri Boulenger 1894.

DISTRIBUTION: Middle elevations of the eastern and western slopes of southern Ecuador, south to central Perú (see figure 4, p. 136, Dixon 1983).

Liophis _epinephelus_ _juvenalis_ Dunn 1937.

DISTRIBUTION: Middle slopes of mountains from central Costa Rica to western Panamá (see figure 1, p. 133, Dixon 1983).

Liophis _epinephelus_ _lamonae_ Dunn 1944.

DISTRIBUTION: Andean slopes (1,500 - 2,600 m) of Colombia, southward to east-central Ecuador (see figures 2, 3, pp. 134, 135, Dixon 1983).

Liophis _epinephelus_ _opisthotaenius_ Boulenger 1908.

DISTRIBUTION: Mérida region of Venezuela and the Páramo de Tama region of Venezuela and Colombia (see figure 2, p. 134, Dixon 1983).

Liophis _epinephelus_ _pseudocobellus_ Peracca 1914.

SYNONYM: _alticolus_ Amaral.

DISTRIBUTION: Middle elevations of central and western Andes of Colombia, south to Ecuador border (see figure 2, p. 134, Dixon 1983).

Liophis _festae_ (Perraca)

Rhadinaea _festae_ Peracca 1897:16. Type locality: Valley of Río Santiago, Ecuador.
Liophis _festae_, Amaral 1929:171.

DISTRIBUTION: From middle elevations of southern Colombia, south through Ecuador, to the middle elevations of Cis-Andean central Perú.

Liophis _flavifrenatus_ (Cope)

Lygophis _flavifrenatus_ Cope 1862:80. Type locality: Río Vermejo, (Bermejo region) Paraguay.
Dromicus _amabilis_ Jan 1867: livr. 24. Type locality: Brasil.
Liophis _flavifrenatus_, Dixon 1980:8.

DISTRIBUTION: Southern Brasil, southward through central and southern Paraguay, northeastern Argentina, and extreme southeastern Brasil (see figure 3, p. 9, Michaud and Dixon 1987).

Liophis _frenatus_ (Werner)

Rhadinaea _frenata_ Werner 1909:224. Type locality: Paraguay.
Rhadinaea _brazili_ Amaral 1923:87. Type locality: Julio Pontes, Brasil.
Liophis _frenatus_, Amaral 1929:45.

DISTRIBUTION: From Primavera, Paraguay, east-southeast to Guayuvira, Brasil (see figure 2, p. 154, Dixon 1983).

Liophis guentheri Peracca

Liophis guentheri Peracca 1897:11. Type locality: Caiza, Bolivia.

DISTRIBUTION: Apparently restricted to the central Chaco region of Argentina, Bolivia and Paraguay (see figure 1, p. 175, Dixon 1987).

Liophis jaegeri (Günther)

Coronella jaegeri Günther 1858:37. Type locality: Brasil.
Liophis dorsalis Peters 1863:283. Type locality: Brasil.
Aporophis coralliventris Boulenger 1894:346. Type locality: an island north of Concepcion, near San Salvador, north Paraguay.
Rhadinaea lineata Jensen 1900:105. Type locality: Taboleiro Grande, Minas Gerais, Brasil.
Liophis jaegeri, Amaral 1926:78.

DISTRIBUTION: Southeast Brasil to coastal Uruguay, and the Río Paraná Basin of Argentina, Brasil, and Paraguay (see figure 3, p. 184, Dixon 1987).

SUBSPECIES: Two.

1.a Subcaudals from 63-75 ($\bar{x}$= 68.5); tail/total length ratios from 0.214-0.268 ($\bar{x}$= 0.231) .... *jaegeri coralliventris*
b Subcaudals from 52-71 ($\bar{x}$= 60.4); tail/total length ratios from 0.193-0.248 ($\bar{x}$= 0.221) .... *jaegeri jaegeri*

Liophis jaegeri jaegeri (Günther) 1858.

SYNONYMS: *dorsalis* Peters, *lineata* Jensen.

DISTRIBUTION: Southeastern Brasil and coastal Uruguay, east of the Río Paraná Basin (see figure 3, p. 184, Dixon 1987).

Liophis jaegeri coralliventris (Boulenger) 1894 (see above)

DISTRIBUTION: Known only from the Río Paraná Basin of Argentina, Brasil, and Paraguay (see figure 3, p. 184, Dixon 1987).

Liophis juliae (Cope)

Aporophis juliae Cope 1879:373. Type locality: Dominica.
Leimadophis mariae Barbour 1914:340. Type locality: Marie-Galante
Dromicus juliae copeae Parker 1936:232. Type locality: Guadeloupe
Liophis juliae, Dixon 1980:10.

DISTRIBUTION: West Indian islands of Dominica, Guadeloupe, and Marie-Galante.

SUBSPECIES: None recognized.

Liophis lineatus (Linnaeus)

Coluber lineatus Linnaeus 1758:221. Type locality: Asia (in error)
Coluber jaculatrix Linnaeus 1766:381. Type locality: Suriname
Coluber terlineatus Lacépède 1826:106. Type locality: none given.
Liophis lineatus, Dixon 1980:10.

SUBSPECIES: None recognized.

DISTRIBUTION: Central Panamá east through Colombia, Venezuela, Guyana, Suriname, French Guiana, to the mouth of the Rio Amazonas, Brasil (Figure 1, p. 4, Michaud and Dixon 1987). A few specimens are known from near the port cities of Guayaquil and Esmeraldas, Ecuador, and are probably accidental introductions via the shipping trade.

Liophis longiventris Amaral

Liophis longiventris Amaral 1925:16. Type locality: none given, but probably the state of Mato Grosso, Brasil.

DISTRIBUTION: Known only from Rio Manjuro, Amazonas, Brasil, and from 12°51'S - 51°46'W, Mato Grosso, Brasil (see figure 2, p. 154, Dixon 1983).

Liophis maryellenae Dixon

Liophis maryellenae Dixon 1985:295. Type locality: Annapolis, Goiás, Brasil.

DISTRIBUTION: Central, southeast Brasil, from Annapolis on the west, to Grão Mogol, on the east; from near Barreiras on the north, to Itambe do Dentro on the south (see figure 4, p. 188, Dixon 1987).

Liophis melanotus (Shaw)

Coluber melanotus Shaw 1802:534. Type locality: Cape of Good Hope, Africa (in error).
Coluber raninus Merrem 1820:106. Type locality: none given.
Coluber vittatus Hallowell 1845:242. Type locality: within 200 miles of Caracas, Colombia (actually in Venezuela).
Liophis melanonotus Cope 1860:253. (replacement name for *melanotus* Shaw).
Liophis melanotus, Dixon 1980:11.

DISTRIBUTION: From both sides of the Andes in Central Colombia, northeast to northeastern Venezuela, Trinidad and Tobago.

SUBSPECIES: Possibly one, undescribed.

1.a Dorsolateral black stripe begins on the nape and is continuous to the tail, head more or less uniform in color, without distinct white parietal spots, maxillary teeth vary from 14-17 ($\bar{x}$= 15.3) .... melanotus (subsp.)

b Dorsolateral black stripe begins posterior to nape, interrupted anteriorly by nape bands or spots that are separated by light colored interspaces, parietals with white diagonal marks extending to the posterior corner of mouth, maxillary teeth vary from 14-21 ($\bar{x}$= 17.9) .... melanotus melanotus

Liophis meridionalis (Schenkel)

Aporophis lineatus meridionalis Schenkel 1901:160. Type locality: Mte. Sociedad, Bemalcue, Paraguay.
Aporophis lineatus lativittatus Mueller 1908:74. Type locality: San Fermin (Chiquitos), Bolivia.
Liophis meridionalis, Dixon 1980:11.

DISTRIBUTION: Central Brasil and northern Bolivia south to southern Paraguay, northeastern tip of Argentina, and extreme southeastern Brasil. (figure e, p. 9, Michaud and Dixon, 1987).

Liophis miliaris (Linnaeus)

Coluber miliaris Linnaeus 1758:220. Type locality: India (in error).
Coluber merremii Wied 1821:121. Type locality: Pedro d'Alcantara, Bahia, Brasil.
C. (oluber) dictyodes Wied 1824:668. Type locality: Cabo Frio, Rio de Janeiro, Brasil.
Coluber bicolor Reuss 1834:145. Type locality: Ilheus, Bahia, Brasil.
Ablabes purpurans Dumeril, Bibron and Dumeril 1854:312. Type locality: Mana, Cayenne. (French Guiana)
Coronella australis Günther 1858:40. Type locality: Australia (in error).
Opheomorphus merremii semiaureus Cope 1862:348. Type locality: Paraguay.
Liophis cobella collaris Jan 1863:293. Type locality: South America.
Liophis reginae ornata Jan 1863:295. Type locality: Buenos Aires, Argentina.
Coronella orientalis Günther 1864:236. Type locality: Dekkan (in error).
Rhadinaea chrysostoma Cope 1868:104. Type locality: Napo or Marañon, Ecuador (= Perú).
Coronella poecilolaemus Günther 1872:19. Type locality: Upper Río Amazonas.
Opheomorphus fuscus Cope 1885:190. Type locality: Sâo Joâo da Monte Negro, Rio Grande do Sul, Brasil.
Rhadinaea orina Griffin 1916:195. Type locality: Sierras of Bolivia (in error).
Dromicus amazonicus Dunn 1922:219. Type locality: Santarém, Brasil.
Rhadinaea merremii natricodes Werner 1926:246. Type locality: unknown.
Liophis mossoroensis Hoge and Lima-Verde 1972:215. Type locality: Mossoro, Rio Grande do Norte, Brasil.
Liophis miliaris, Amaral 1926:78.

DISTRIBUTION: Eastern South America, from Guyana south to Buenos Aires, Argentina, with scattered records in the Amazon Basin and Cerrado of Brasil (see figure 1, p. 792, Dixon 1983; figures 5, 6, and 7, pp. 12-14, Gans 1964).

SUBSPECIES: Seven.

1.a Venter with large medial, contrasting yellow and black marks from near throat to the anal plate .... _miliaris_ _chrysostomus_
b Venter without checkerboard pattern of yellow and black marks, but ventrals may be edged or have a suffusion of dark color 2

2.a Ventrals from 163-190 ($\bar{x}$= 176.2); dorsum typically with dark blotches with light interspaces .... _miliaris_ _semiaureus_
b Ventrals ≤173; dorsum typically unicolored or with light centers to each scale, or with dorsal and lateral dark blotches separated by dorsolateral light lines posteriorly, or with an almost black dorsum with light flecks scattered throughout 3

3.a Subcaudals ≥76 or more, juveniles with a pair of light nuchal spots, adults uniform brown, each dorsal scale with a pale light center .... _miliaris_ _amazonicus_
b Subcaudals ≤68; juvenile pattern variable, but never with a pair of light nuchal spots, adults light tan to black, with light centered scales, or with light flecks scattered throughout 4

4.a Dorsum light to dark brown, each scale with a light center, venter obscurely marked with dark or each ventral lightly edged with black 5
b Dorsum dark brown to black with scattered flecks of white, or with both dorsal and lateral dark blotches separated posteriorly by a dorsolateral light line; venter uniform white, or marked with black 6

5.a Juveniles with dark-edged gulars; venter marked with yellow and black. Adults with or without obscure marks on the gulars; dorsum dark brown with obscure light centers to each scale; venter with less contrasting dark and light marks .... _miliaris_ _miliaris_
5.b Juveniles with white gulars; venter white or ventrals edged with black laterally. Adults with white venters, but each ventral lightly edged with black laterally and black color eventually meeting at the midline posteriorly; dorsum of adults brown to dark brown with highly contrasting light centers to each scale .... _miliaris_ _orinus_

6.a Ventrals from 148-166 ($\bar{x}$= 158.7); dorsum dark brown to black with many scattered white flecks; edges of ventrals and subcaudals heavily marked with black from midbody to the tip of the tail .... miliaris mossoroensis

b Ventrals from 135-156 ($\bar{x}$= 146.5); dorsum with a series of dark brown to black dorsal and lateral blotches on a light tan, greenish or brown ground color, with a dorsolateral light line separating the dorsal and lateral blotches posteriorly. Occasionally, the dorsum is uniform in color with a light center to each scale; ventrals and subcaudals immaculate white or cream .... miliaris merremii

Liophis miliaris miliaris (Linnaeus) 1758.

SYNONYMS: purpurans Dumeril, Bibron and Dumeril; orientalis Günther; collaris Jan.

DISTRIBUTION: Guyana, Suriname, and French Guiana (see figure 1, p. 792, Dixon 1983).

Liophis miliaris amazonicus (Dunn) 1922.

DISTRIBUTION: Santarém, Brasil, south to Rio Iténez, Beni, Bolivia, east and south to Mato Grosso, Brasil (see figure 1, p. 792, Dixon 1983).

Liophis miliaris chrysostomus (Cope) 1868.

SYNONYM: poecilolaemus Günther.

DISTRIBUTION: Rainforests of Brasil, Colombia, Ecuador and Perú (see figure 1, p. 792, Dixon 1983).

Liophis miliaris merremii (Wied) 1821.

SYNONYMS: australis Günther; bicolor Reuss; dictyodes Wied.

DISTRIBUTION: Recife, Pernambuco, Brasil, south-southwest to Rio de Janeiro (principally the Brasilian Atlantic rainforest).

Liophis miliaris mossoroensis Hoge and Lima-Verge 1972.

DISTRIBUTION: Northeastern Brasil, primarily Caatinga and dry Cerrado (see figure 1, p. 792, Dixon 1983).

Liophis miliaris orinus (Griffin) 1914.

SYNONYM: natricoides Werner.

DISTRIBUTION: Southeastern Brasil, from southern Minas Gerais, south through the states of São Paulo, Paraná, Santa Catarina, to the northern one-third of Rio Grande do Sul (see figure 1, p. 792, Dixon 1983).

Liophis miliaris semiaureus (Cope) 1862.

SYNONYMS: fuscus Cope; ornata Jan.

DISTRIBUTION: Paraguay, west and south of Iguazú Falls; northeastern Argentina; southern and eastern Uruguay; southern one-half of the Brasilian state of Rio Grande do Sul (see figure 1, p. 792, Dixon 1983).

Liophis ornatus (Garman)

Dromicus ornatus Garman 1887:281. Type locality: Saint Lucia, West Indies.
Dromicus giganteus Jan 1863:67. Type locality: unknown (see Dixon, 1981, concerning the nature of this senior synonym).
Leimadophis boulengeri Barbour 1914:339 (replacement name for ornatus Garman)
Liophis ornatus, Dixon 1981:13.

DISTRIBUTION: Saint Lucia and the satellite island of Maria (see figure 1, p. 792, Dixon 1983).

Liophis paucidens (Hoge)

Lygophis paucidens Hoge 1953:253. Type locality: Mato Verde, Mato Grosso, Brasil.
Liophis paucidens, Dixon 1980:13.

DISTRIBUTION: Known only from east-central Brasil (see figure 3, p. 9, Michaud and Dixon 1987).

Liophis perfuscus Cope

Liophis perfuscus Cope 1862:77. Type locality: Barbados.
Liophis rufus Jan 1863:91. Type locality: unknown.

DISTRIBUTION: Known only from the West Indian island of Barbados (see figure 1, p. 297, Dixon 1981).

Liophis poecilogyrus (Wied)

Coluber poecilogyrus Wied 1825:371. Type locality: Barra de Jucú, Rio Espirito Santo, Brasil.
Coluber m-nigrum Raddi 1820:338. Type locality: Rio de Janeiro, Brasil.
Natrix G. forsteri Wagler 1824:16. Type locality: Bahia, Brasil.
Coluber doliatus Wied 1825:368. Type locality: Barra de Jucú, Rio Espirito Santo, Brasil.
X. (enodon) schotti Schlegel 1837:91. Type locality: South America.
Liophis merremii sublineatus Cope 1860:252. Type locality: Buenos Aires, Argentina.
Opheomorphus doliatus caesius Cope 1862:348. Type locality: Santa Fé, Paraguay.
Liophis subfasciatus Cope 1862:77. Type locality: Paraguay.
Liophis ornatissima Jan 1863:53. Type locality: Paraná (Brasil?).
Liophis typhlus gastrostictus Jan 1863:53. Type locality: Fernambuco (= Pernambuco, Brasil).

Liophis reginae viridicyanea Jan and Sordelli 1866:18(2)91). Type locality: Paraná, Brasil.
Liophis cobella flaviventris Jan and Sordelli 1866:16(5)92). Type locality: South America.
Rhadinaea dichroa Werner 1899:115. Type locality: Argentina.
Rhadinaea praeornata Werner 1909:58. Type locality: central Brasil.
Leimadophis poecilogyrus reticulatus Parker 1931:285. Type locality: Makthlawaiya, Paraguay.
Leimadophis poecilogyrus albadspersus Amaral 1944:78. Type locality: Piracicaba, São Paulo, Brasil.
Leimadophis poecilogyrus amazonicus Amaral 1944:81. Type locality: probably Pará, Brasil (but not stated as such).
Leimadophis poecilogyrus franciscanus Amaral 1944:80. Type locality: Pirapora, Minas Gerais, Brasil.
Leimadophis poecilogyrus intermedius Amaral 1944:81. Type locality: Goiás, Brasil.
Leimadophis poecilogyrus montanus Amaral 1944:79. Type locality: Piquete, São Paulo, Brasil.
Leimadophis poecilogyrus pictostriatus Amaral 1944:77. Type locality: Sao Lourenço, Brasil.
Leimadophis poecilogyrus pinetincola Amaral 1944:78. Type locality: central Paraná, Brasil.
Leimadophis poecilogyrus platensis Amaral 1944:77. Type locality: La Plata, Argentina.
Leimadophis poecilogyrus xerophilus Amaral 1944:81. Type locality: probably Ceara, Brasil (but not stated as such).
Leimadophis poecilogyrus lancinii Hoge, Romano and Cordeiro 1978:77. (replacement name for L. p. amazonicus Amaral).
Liophis poecilogyrus, Dixon 1980:13.

DISTRIBUTION: Much of eastern South America, from Venezuela (?) east and south through Brasil to central Bolivia, southeast into northeastern Argentina.

SUBSPECIES: None to possibly nine. I do not recognize subspecies of this taxon because of the mosaic nature of the variation examined thus far. Note that there are three senior synonyms for the name poecilogyrus. Any use of a senior synonym would upset the stability of the long, continued use of poecilogyrus in the literature, and I recommend none be used.

Liophis problematicus Myers

Liophis problematicus Myers 1986:2. Type locality: San Juan, Río Tambopata; Sandia Province, 14°13'S - 69°10'W, 1,520 m, Puno, Perú.

DISTRIBUTION: Known only from type locality.

Liophis reginae (Linnaeus)

Coluber reginae Linnaeus 1758:219. Type locality: India (in error).
Coluber violaceus Lacépède 1789:116. Type locality: none given.
Coluber graphicus Shaw 1802:474. Type locality: America.
Natrix semilineata Wagler 1824:33. Type locality: Rio Solimöes, Brasil.

Liophis _oligolepis_ Boulenger 1905:455. Type locality: Igapé-Assu, Pará, Brasil.
Leimadophis _reginae_ _macrosoma_ Amaral 1935:238. Type locality: Canna Brava, Goiás, Brasil.
Leimadophis _reginae_ _maculicauda_ Hoge 1954:241. Type locality: none given.
Leimadophis _zweifeli_ Roze 1959. Type locality: Rancho Grande, Aragua, Venezuela.
Liophis _reginae_, Dixon 1980:24.

DISTRIBUTION: Cis-Andean South America, from Colombia to northern Argentina; also Trinidad and Tobago (see figure 2, p. 118, Dixon 1983).

SUBSPECIES: Four.

1.a Dorsum with small black and yellow spots; black lateral caudal stripe faint or absent 2
b Dorsum greenish, olive, or grayish, never with small yellow and black spots; black lateral caudal stripe always present and distinct 3

2.a Subcaudals average 80 (69-88) .... _reginae_ _zweifeli_
b Subcaudals average 65 (55-78) .... _reginae_ _semilineatus_

3.a Dorsal scale rows one and two pale colored,in contrast to dorsal coloration 4
b Dorsal scale rows one and two similar in color to rest of body 5

4.a Dorsum with dense pale and dark paravertebral flecking; subcaudals average 74 (63-80) .... _reginae_ _reginae_
b Dorsum without pale and dark paravertebral flecking; subcaudals average 67 (63-80) .... _reginae_ _semilineatus_

5.a Subcaudals with ventrolateral black spots, flecks, or smudges; subcaudals average 81 (75-91) .... _reginae_ _macrosomus_
b Subcaudals immaculate; subcaudals average 70 (55-81) .... _reginae_ _semilineatus_

Liophis _reginae_ _reginae_ (Linnaeus) 1758.

SYNONYMS: _violaceus_ Lacépède; _graphicus_ Shaw.

DISTRIBUTION: Guyana, Suriname, and French Guiana (see figure 2, p. 118, Dixon 1983).

Liophis _reginae_ _macrosomus_ (Amaral) 1935.

SYNONYM: _maculicaudus_ Hoge.

DISTRIBUTION: Chaco and Cerrado of Argentina, Bolivia, Brasil, and Paraguay (see figure 2, p. 118, Dixon 1983).

Liophis reginae semilineatus (Wagler) 1824.

SYNONYM: oligolepis Boulenger.

DISTRIBUTION: Forested Amazon Basin of Venezuela, Colombia, Ecuador, Perú, Bolivia, and Brasil; also Atlantic rainforest of Brasil (see figure 2, p. 118, Dixon 1983).

Liophis reginae zweifeli (Roze) 1959.

DISTRIBUTION: Montane rainforests of Venezuela and Trinidad (see figure 2, p. 118, Dixon 1983).

Liophis sagittifer (Jan)

L. (iopeltis) sagittifer Jan 1863:82. Type locality: Mendoza, Argentina.
Liophis pulcher Steindachner 1867:267. Type locality: Chile (in error).
Rhadinaea modesta Koslowsky 1896:453. Type locality: Salta, Argentina.
Liophis trifasciatus Werner 1899:114. Type locality: Paraguay.
Zamensis argentinus Bréthès 1917:93. Type locality: La Banda, Santiago del Estero, Argentina.
Liophis sagittifer, Dixon 1980:15.

DISTRIBUTION: Foothills of the Andes of Bolivia and Argentina, south to Chubut, Argentina, north and east into the Monte and Chaco of Argentina and Paraguay. (see figure 2, p. 391, Dixon and Thomas 1982).

SUBSPECIES: Two.

1.a Dorsum uniform brownish gray, olive gray, or with obscure undulating middorsal dark line and some indication of a lateral dark line bordering the upper edge of scale row three; 81% of population with 19-19-17 scale rows .... sagittifer modestus
b Dorsum with large to median sized paravertebral reddish black to black blotches from nape to tail; often with secondary row of intercalary black blotches laterally, and occasionally a median series of dorsal blotches anteriorly; 100% of population with 19-19-15 scale rows .... sagittifer sagittifer

Liophis sagittifer sagittifer (Jan) 1863.

SYNONYMS: pulcher Steindachner; argentinus Bréthès.

DISTRIBUTION: Monte of Patagonia, from Tucuman, south to the state of Chubut, Argentina. (see figure 2, p. 391, Dixon and Thomas 1982).

Liophis sagittifer modestus (Koslowsky) 1896.

SYNONYM: trifasciatus Werner.

DISTRIBUTION: Chaco-Bonariesian Plain of Argentina, Bolivia, and Paraguay. (see figure 2, p. 391, Dixon and Thomas 1982).

Liophis taeniurus Tschudi

Liophis taeniurus Tschudi 1845:164. Type locality: Perú, in der heissen waldregion.

DISTRIBUTION: Middle and upper elevations of the Andes in southern Ecuador, south through Perú to the Cochabamba region of Bolivia.

SUBSPECIES: None described; possibly two or more suggested from recent analysis of data from additional material.

Liophis triscalis (Linnaeus)

Coluber triscalis Linnaeus 1758:224. Type locality: India (in error).
Coluber corallinus Linnaeus 1758:223. Type locality: Asia (in error).
Liophis triscalis, Boulenger 1894:129.

DISTRIBUTION: Known only from the Leeward Island of Curaçao. (see figure 1, p. 297, Dixon 1981).

Liophis typhlus (Linnaeus)

Coluber typhlus Linnaeus 1758:218. Type locality: India (in error).
Xenodon isolepis Cope 1870:155. Type locality: Pebas, Ecuador (= Perú)
Opheomorphus brachyurus Cope 1887:57. Type locality: Chupada, Mato Grosso, Brasil.
Liophis elaeoides Griffin 1916:187. Type locality: Prov. del Sara, Bolivia.
Liophis macrops Werner 1925:57. Type locality: Paramaribo, Suriname.
Liophis typhlus, Dixon 1980:16.

DISTRIBUTION: Rainforests of the Guiana Shield and Amazon Basin, also the Chaco and Cerrado of Bolivia, Brasil, and Paraguay. (see figure 1, p. 175, Dixon 1987).

SUBSPECIES: Three.

1.a Ventrals 133-163 ($\bar{x}$= 147.3); juveniles and adults with dark paravertebral chevron marks .... *typhlus typhlus*
b Ventrals 158-172 ($\bar{x}$= 163.5); juveniles and adults without dark chevron marks 2

2.a Subcaudals 40-49 ($\bar{x}$= 44.4); tail/total length ratios 0.140-0.160 ($\bar{x}$= 0.149) .... *typhlus brachyurus*
b Subcaudals 49-56 ($\bar{x}$= 52.0); tail/total length ratios 0.160-0.200 (m= 0.171) .... *typhlus elaeoides*

Liophis typhlus typhlus (Linnaeus) 1758.

SYNONYMS: *isolepis* Cope; *macrops* Werner.

DISTRIBUTION: Rainforests of Guiana Shield, and Amazon Basin (see figure 1, p. 175, Dixon 1987).

Liophis typhlus brachyurus (Cope) 1887.

DISTRIBUTION: Deciduous mesophytic forests of southeastern Brasil, and the Campo Cerrado forests of east-central Brasil (see figure 1, p. 175, Dixon 1987).

Liophis typhlus elaeoides Griffin 1916.

DISTRIBUTION: Mesic Chaco forests of southeastern Bolivia; northern Paraguay, and western Mato Grosso, Brasil (see figure 1, p. 175, Dixon 1987).

Liophis vanzolinii Dixon

Liophis vanzolinii Dixon 1985:567. Type locality: Achiras, Cordoba, Argentina.

DISTRIBUTION: Known only from three localities in the western part of the Argentine state of Cordoba (see figure 1, p. 566, Dixon 1985).

Liophis viridis Günther

Liophis viridis Günther 1862:58. Type locality: Pernambuco, Brasil
Liophis typhlus prasina Jan and Sordelli 1866:18(4)(3). Type locality: Brasil.

DISTRIBUTION: The Caatinga, Agreste, and Atlantic rainforests of Brasil. (see figure 2, p. 181, Dixon 1987).

SUBSPECIES: Two.

1.a Ventrals 169-188 ($\bar{x}$= 177); reduction site ventrals 98-116 ($\bar{x}$= 106.6) .... viridis viridis
b Ventrals 181-202 ($\bar{x}$= 189.8); reduction site ventrals 102-123 ($\bar{x}$= 114.6) .... viridis prasinus

Liophis viridis viridis Günther 1862.

DISTRIBUTION: The agreste and Atlantic rainforests of Brasil, from Recife to Salvador (see figure 2, p. 181, Dixon 1987).

Liophis viridis praesinus Jan and Sordelli 1866.

DISTRIBUTION: The Caatinga forest of Brasil (see figure 2, p. 181, Dixon 1987).

Liophis williamsi (Roze)

Urotheca williamsi Roze 1958:1. Type locality: El Junquito, D.F., Venezuela.
Liophis williamsi, Dixon 1980:17.

DISTRIBUTION: Cloud Forests of the coastal Andes of Venezuela (see figure 2, p. 118, Dixon 1983).

COUNTRY LISTS

(containing taxa of *Liophis*)

CENTRAL AMERICA

COSTA RICA

Liophis epinephelus juvenalis

PANAMÁ

Liophis epinephelus juvenalis
Liophis epinephelus epinephelus
Liophis lineatus

SOUTH AMERICA

ARGENTINA

Liophis sp. nov.
Liophis anomalus
Liophis elegantissimus
Liophis flavifrenatus
Liophis guentheri
Liophis jaegeri coralliventris
Liophis miliaris semiaureus
Liophis meridionalis
Liophis poecilogyrus
Liophis reginae macrosomus
Liophis sagittifer modestus
Liophis sagittifer sagittifer
Liophis vanzolinii

BOLIVIA

Liophis almadensis sub-sp.
Liophis almadensis almadensis
Liophis andinus
Liophis breviceps breviceps
Liophis cobella dyticus
Liophis dilepis
Liophis guentheri
Liophis meridionalis
Liophis miliaris amazonicus
Liophis poecilogyrus
Liophis reginae macrosomus
Liophis reginae semilineatus
Liophis sagittifer modestus
Liophis taeniurus
Liophis typhlus elaeoides
Liophis typhlus typhlus

BRASIL

Liophis atraventer
Liophis almadensis
Liophis anomalus
Liophis breviceps breviceps
Liophis carajasensis
Liophis cobellus dyticus
Liophis cobellus taeniogaster
Liophis dilepis
Liophis flavifrenatus
Liophis frenatus
Liophis jaegeri jaegeri
Liophis jaegeri coralliventris
Liophis lineatus
Liophis longiventris
Liophis maryellenae
Liophis meridionalis
Liophis miliaris amazonicus
Liophis miliaris chrysostomus
Liophis miliaris merremii
Liophis miliaris mossoroensis
Liophis miliaris orinus
Liophis miliaris semiaureus
Liophis paucidens
Liophis poecilogyrus
Liophis reginae macrosomus
Liophis reginae semilineatus
Liophis typhlus brachyurus
Liophis typhlus elaeoides
Liophis typhlus typhlus
Liophis viridis prasinus
Liophis viridis viridis

COLOMBIA

Liophis breviceps breviceps
Liophis cobellus dyticus
Liophis epinephelus bimaculatus
Liophis epinephelus epinephelus
Liophis epinephelus lamonae
Liophis epinephelus opisthotaenius
Liophis epinephelus pseudocobellus
Liophis festae
Liophis lineatus
Liophis melanotus melanotus
Liophis miliaris chrysostomus
Liophis reginae semilineatus
Liophis typhlus typhlus

ECUADOR

Liophis breviceps breviceps
Liophis cobellus dyticus
Liophis epinephelus albiventris
Liophis epinephelus bimaculatus
Liophis epinephelus epinephelus
Liophis epinephelus fraseri
Liophis epinephelus lamonae
Liophis festae
Liophis lineatus
Liophis miliaris chrysostomus
Liophis reginae semilineatus
Liophis taeniurus
Liophis typhlus typhlus

FRENCH GUIANA

Liophis breviceps breviceps
Liophis cobellus cobellus
Liophis lineatus
Liophis miliaris miliaris
Liophis poecilogyrus
Liophis reginae reginae
Liophis typhlus typhlus

GUYANA

Liophis breviceps breviceps
Liophis cobellus cobellus
Liophis lineatus
Liophis miliaris miliaris
Liophis poecilogyrus
Liophis reginae reginae
Liophis typhlus typhlus

PARAGUAY

Liophis almadensis
Liophis dilepis
Liophis flavifrenatus
Liophis frenatus
Liophis guentheri
Liophis jaegeri coralliventris
Liophis longiventris
Liophis meridionalis
Liophis miliaris semiaureus
Liophis poecilogyrus
Liophis reginae macrosomus
Liophis sagittifer modestus
Liophis typhlus elaeoides

PERÚ

Liophis breviceps breviceps
Liophis cobellus dyticus
Liophis epinephelus fraseri
Liophis festae
Liophis miliaris chrysostomus
Liophis problematicus
Liophis miliaris chrysostomus
Liophis reginae semilineatus
Liophis taeniurus
Liophis typhlus typhlus

SURINAME

Liophis breviceps breviceps
Liophis cobellus cobellus
Liophis lineatus
Liophis miliaris miliaris
Liophis poecilogyrus
Liophis reginae reginae
Liophis typhlus typhlus

URUGUAY

Liophis anomalus
Liophis jaegeri jaegeri
Liophis miliaris semiaureus
Liophis poecilogyrus

VENEZUELA

Liophis breviceps breviceps
Liophis breviceps canaimus
Liophis cobellus cobellus
Liophis cobellus trebbaui
Liophis epinephelus opisthotaenius
Liophis lineatus
Liophis melanotus melanotus
Liophis melanotus subspecies
Liophis poecilogyrus (?)
Liophis reginae semilineatus
Liophis reginae zweifeli
Liophis typhlus typhlus
Liophis williamsi

CARIBBEAN ISLANDS

BARBADOS

Liophis perfuscus

CARIBBEAN ISLANDS (Continued)

CURACAO

Liophis triscalis

DOMINICA

Liophis juliae

GUADELOUPE

Liophis juliae

MARIE-GALANTE

Liophis juliae

MARTINIQUE

Liophis cursor

SAINT LUCIA

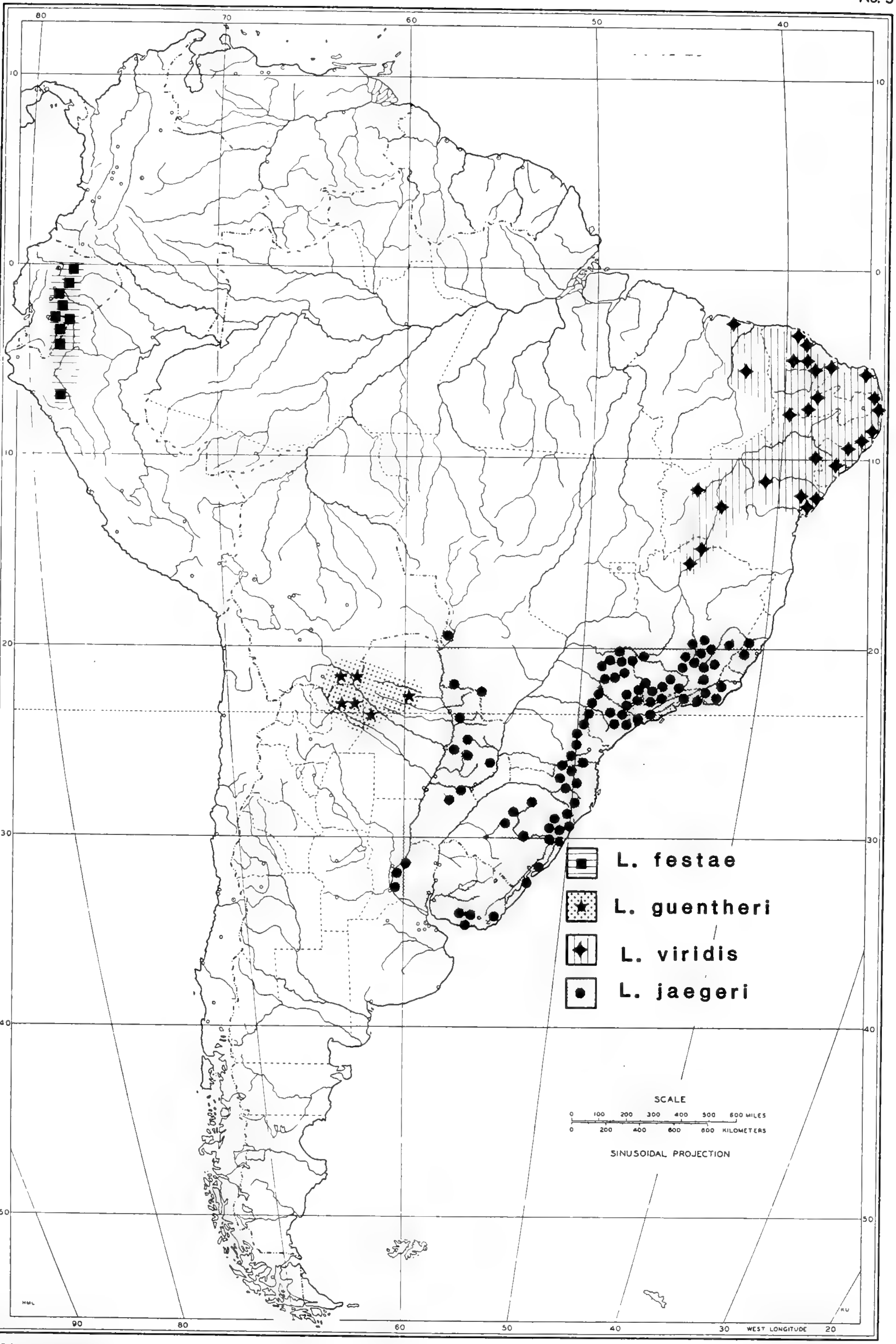
Liophis ornatus

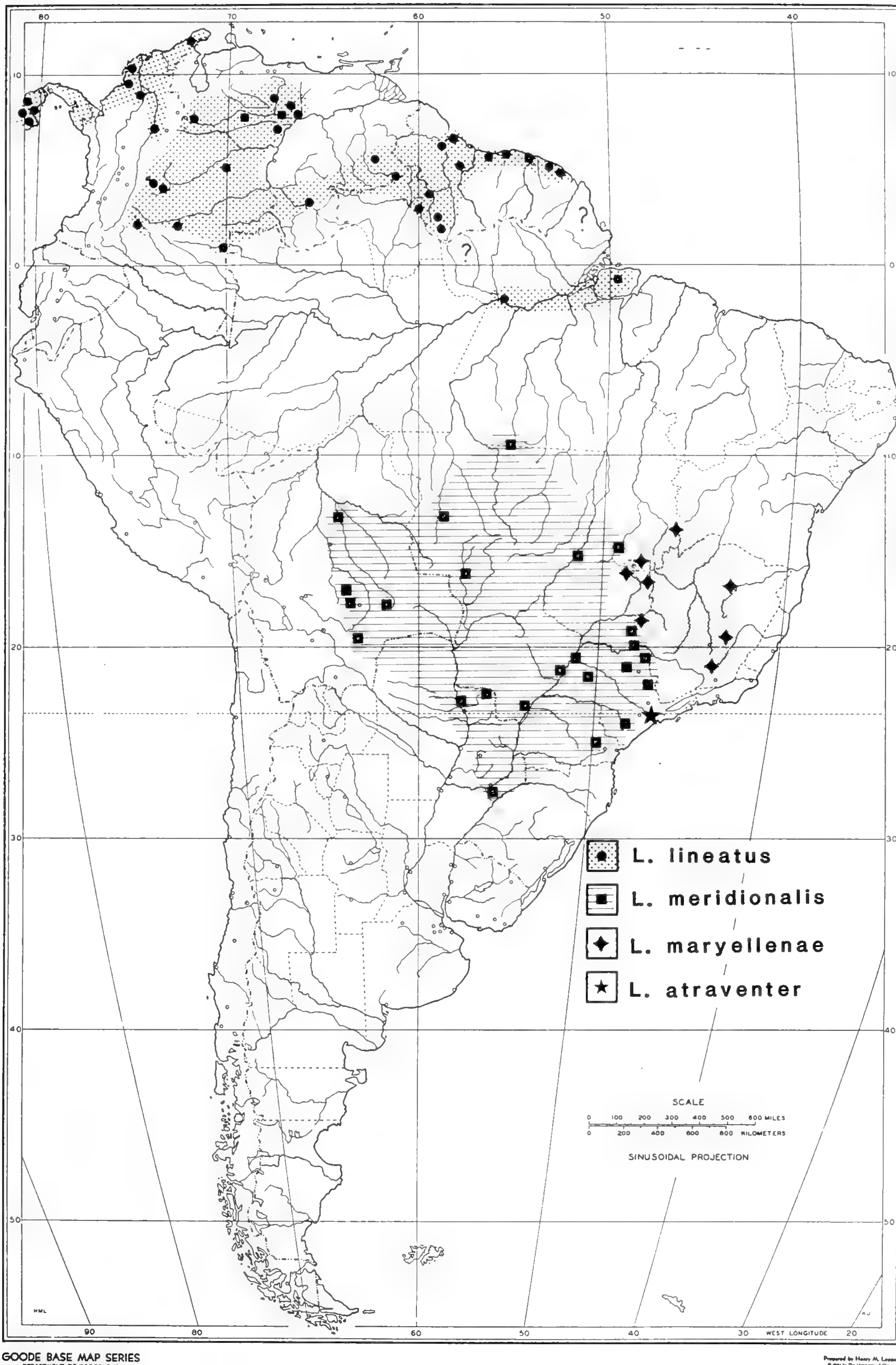
TOBAGO

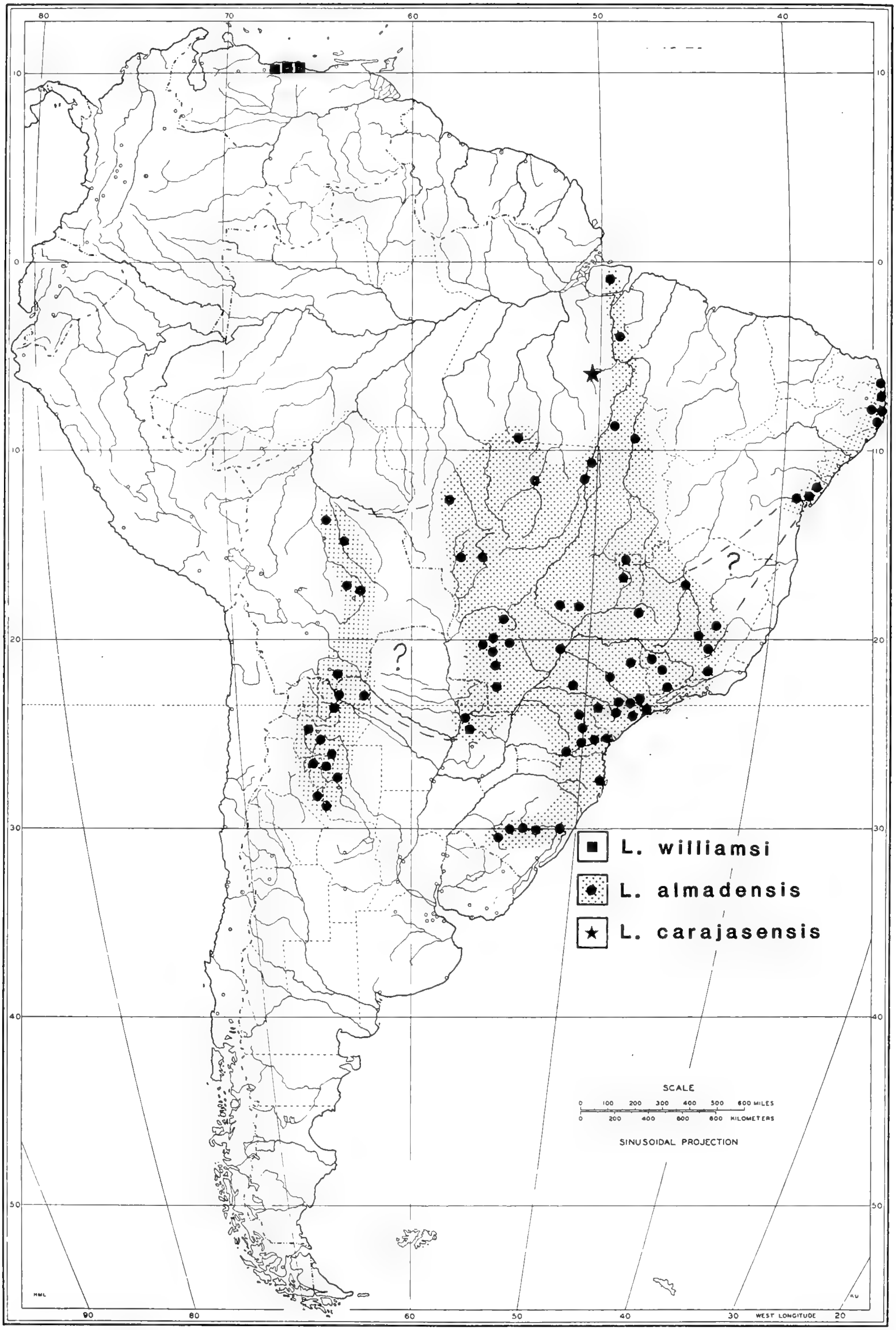
Liophis melanotus
Liophis reginae

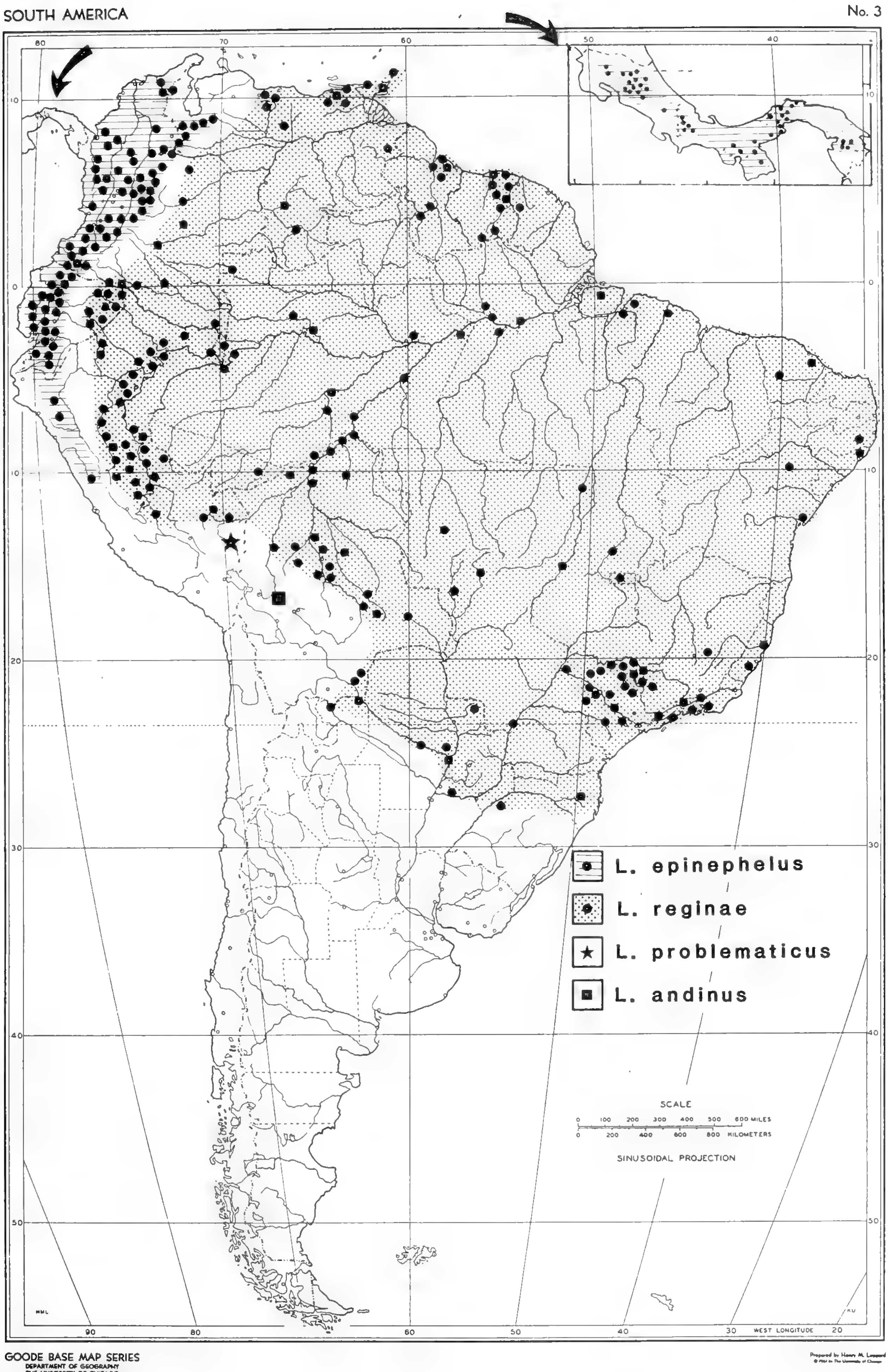
TRINIDAD

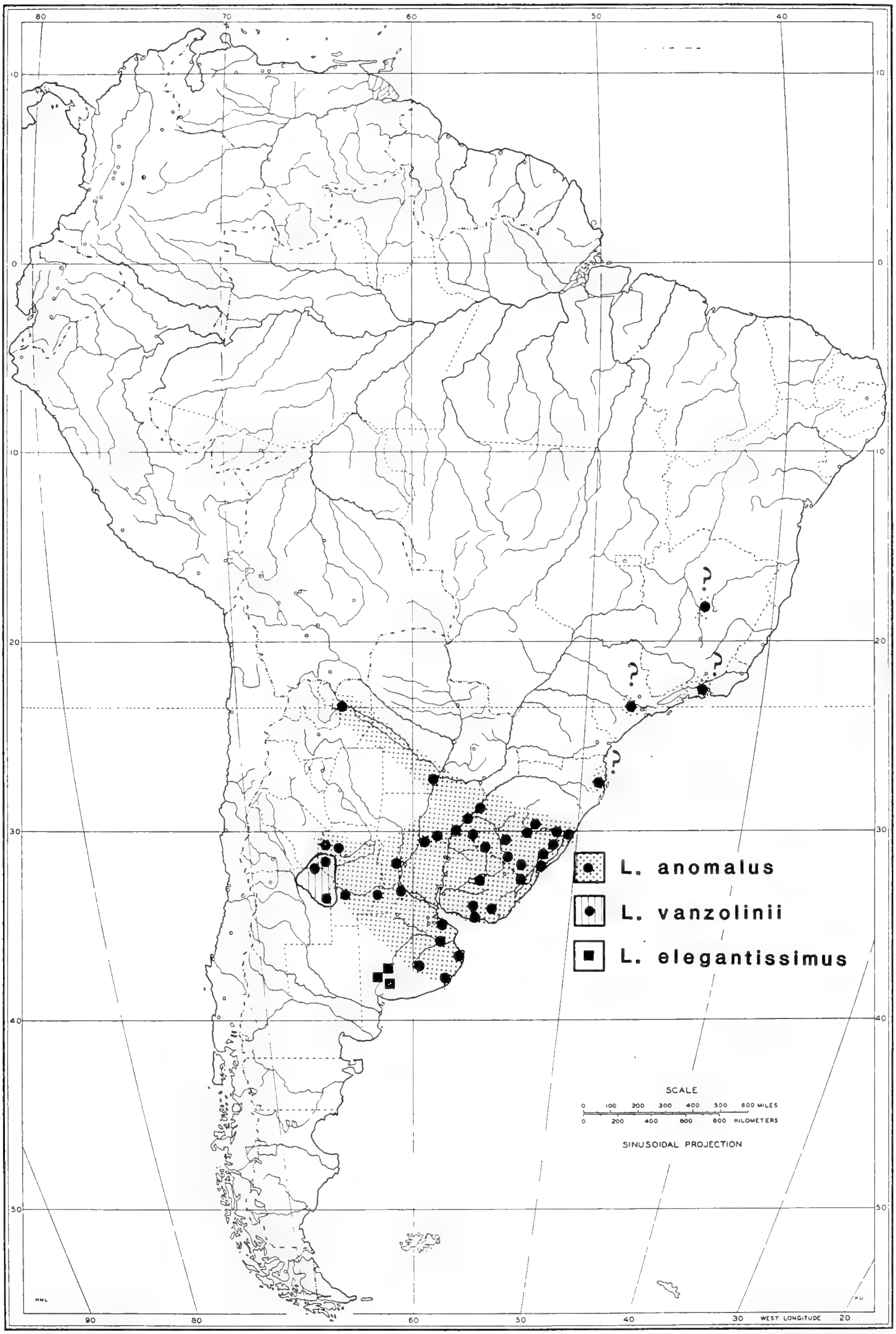
Liophis cobellus cobellus
Liophis melanotus subsp.
Liophis reginae zweifeli

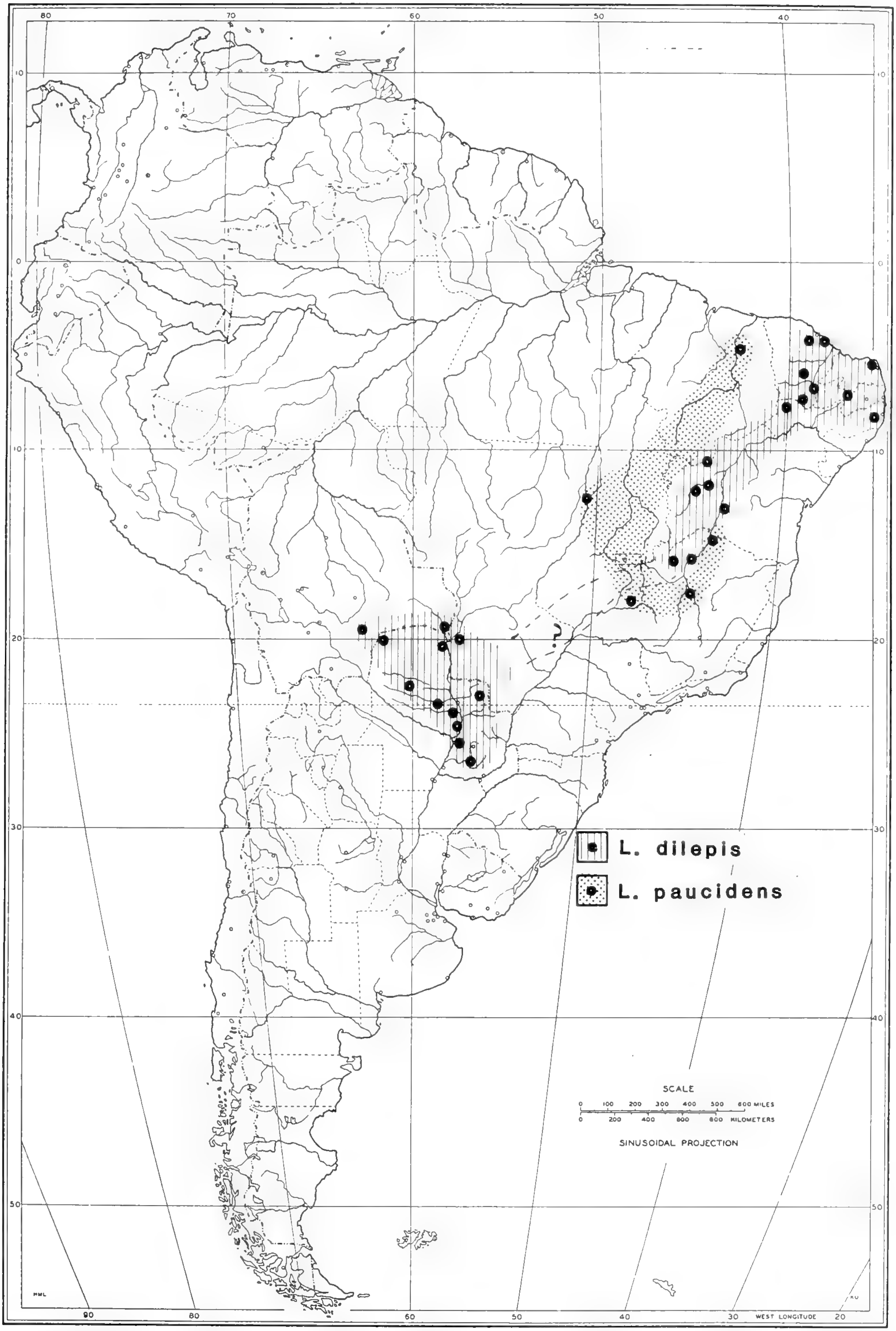

L. festae
L. guentheri
L. viridis
L. jaegeri
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE


L. lineatus
L. meridionalis
L. maryellenae
L. atraventer
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE

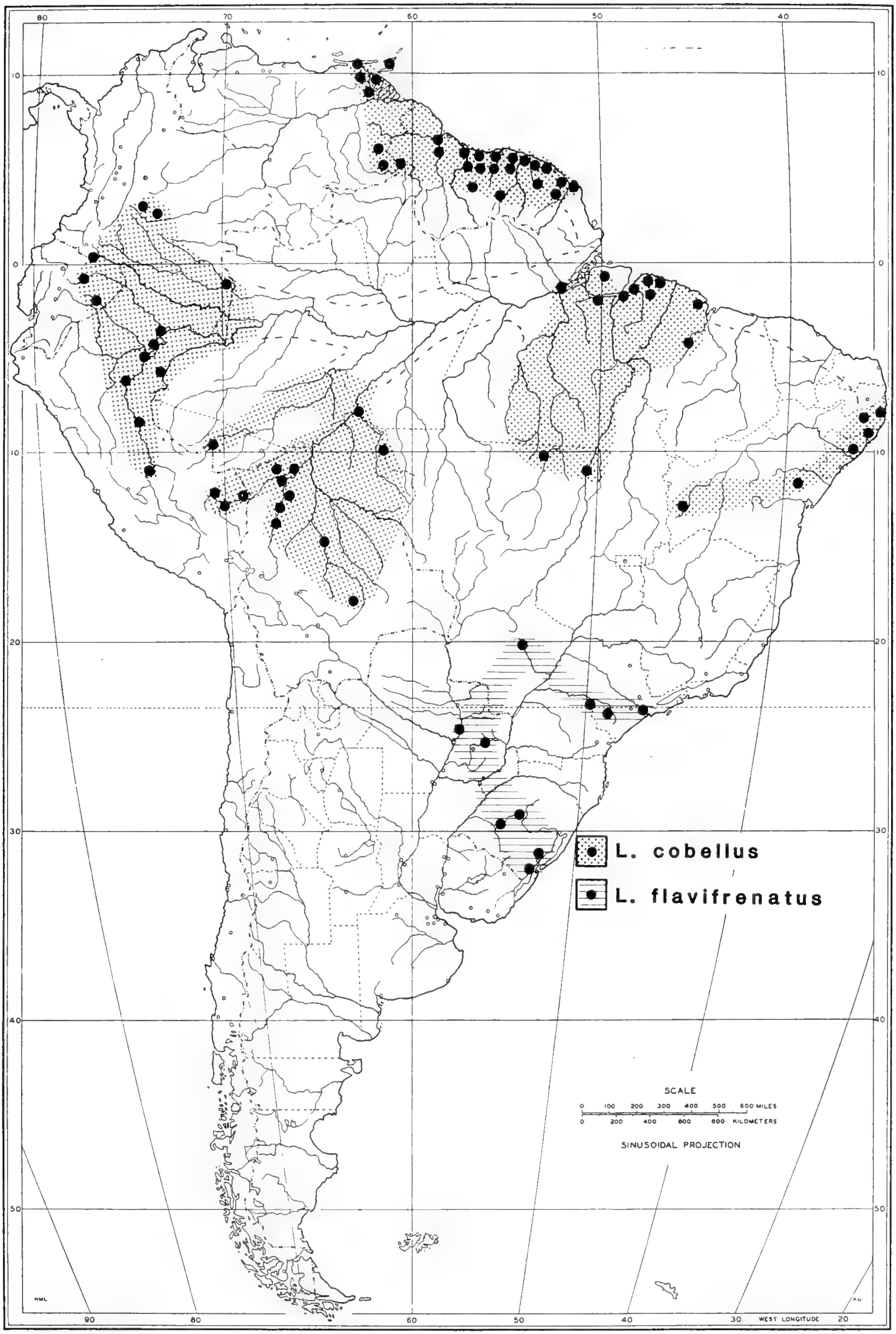

L. williamsi
L. almadensis
L. carajasensis
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE


SOUTH AMERICA
No. 3
L. epinephelus
L. reginae
L. problematicus
L. andinus
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE
GOODE BASE MAP SERIES
DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF CHICAGO
HENRY M. LEPPARD, EDITOR


L. anomalus
L. vanzolinii
L. elegantissimus
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE

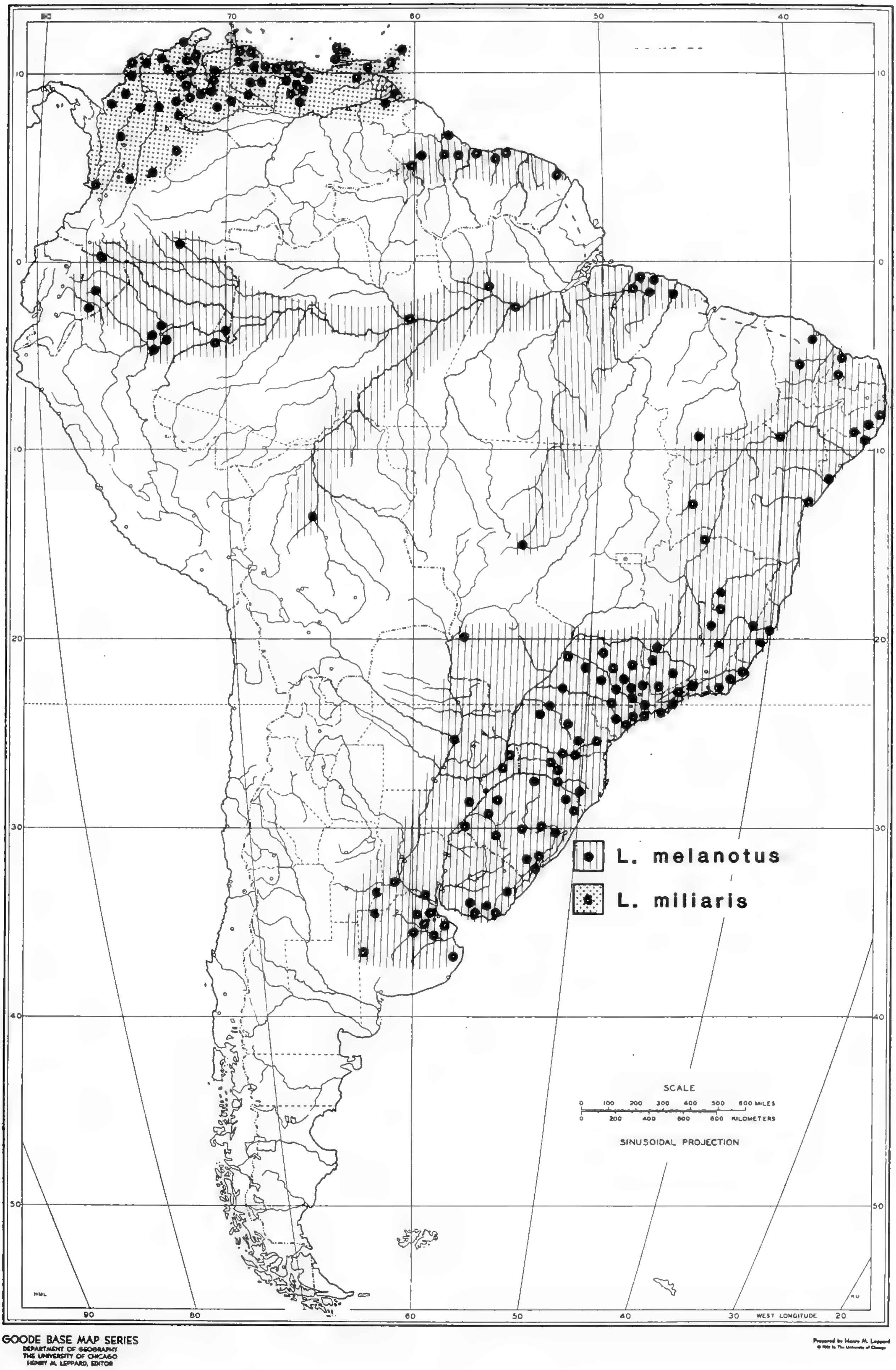

L. dilepis
L. paucidens
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE

SOUTH AMERICA No. 3



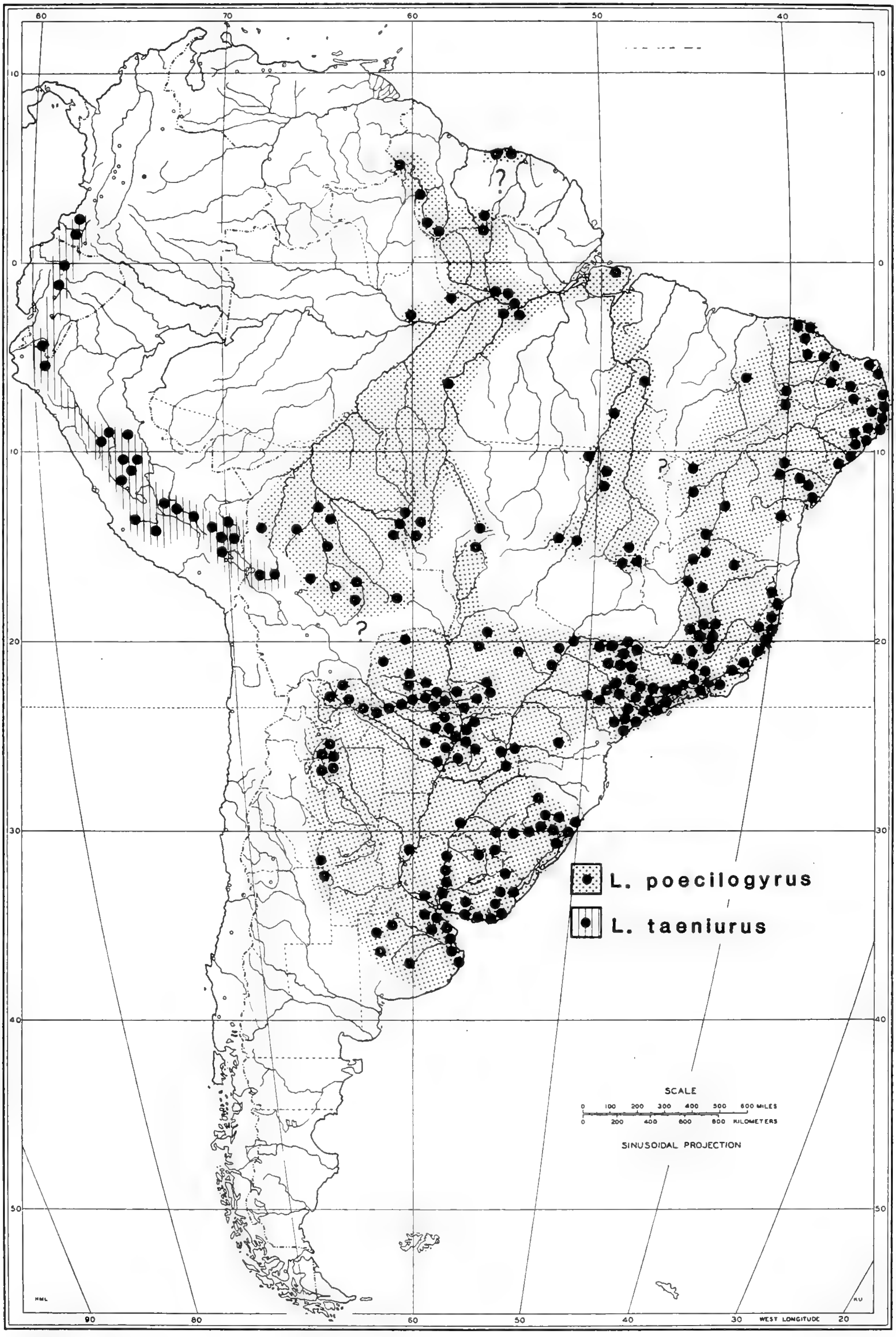
GOODE BASE MAP SERIES
DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF CHICAGO
HENRY M. LEPPARD, EDITOR

Prepared by Henry M. Leppard


L. melanotus
L. miliaris
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE

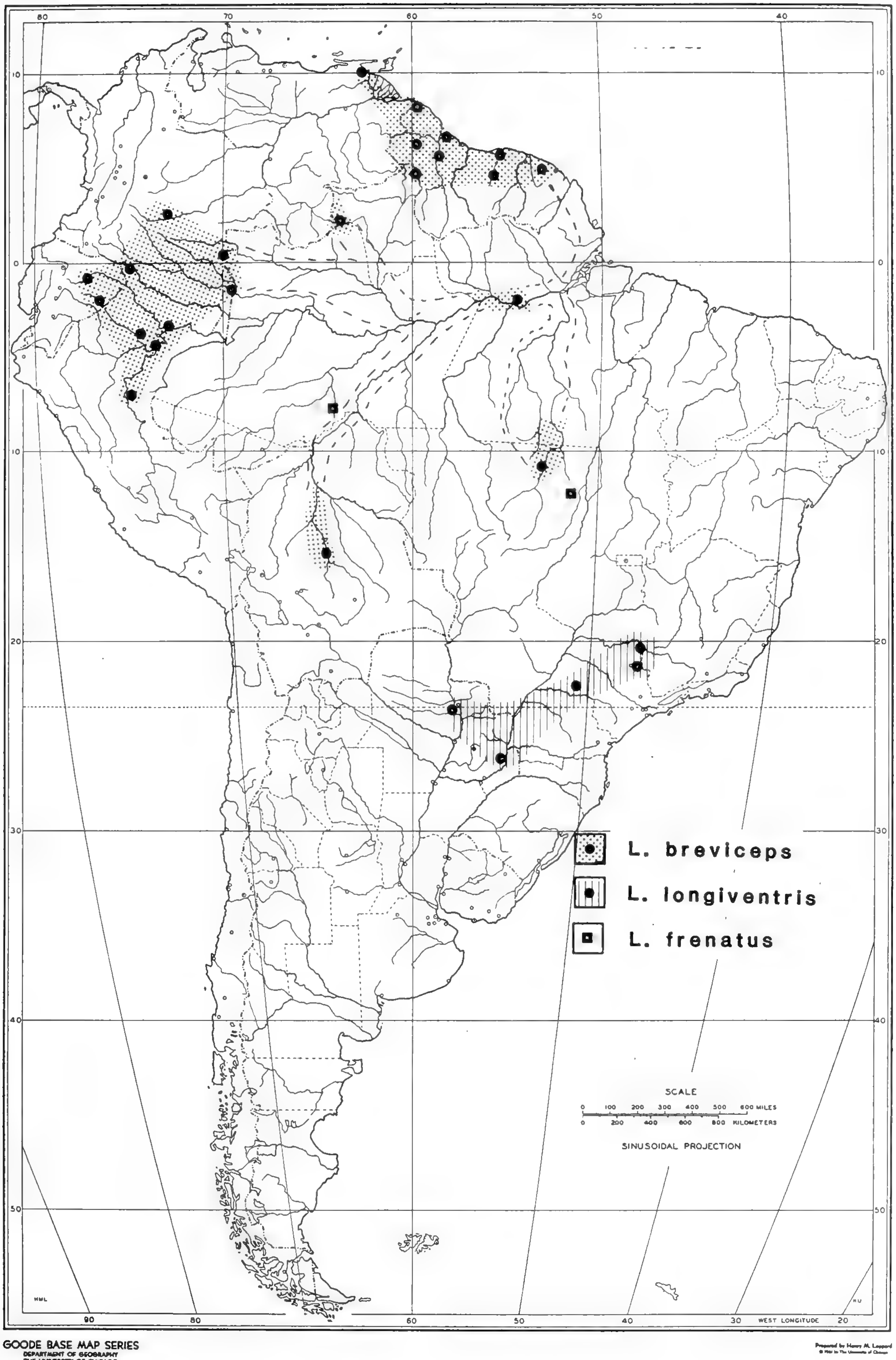
SOUTH AMERICA

No. 3



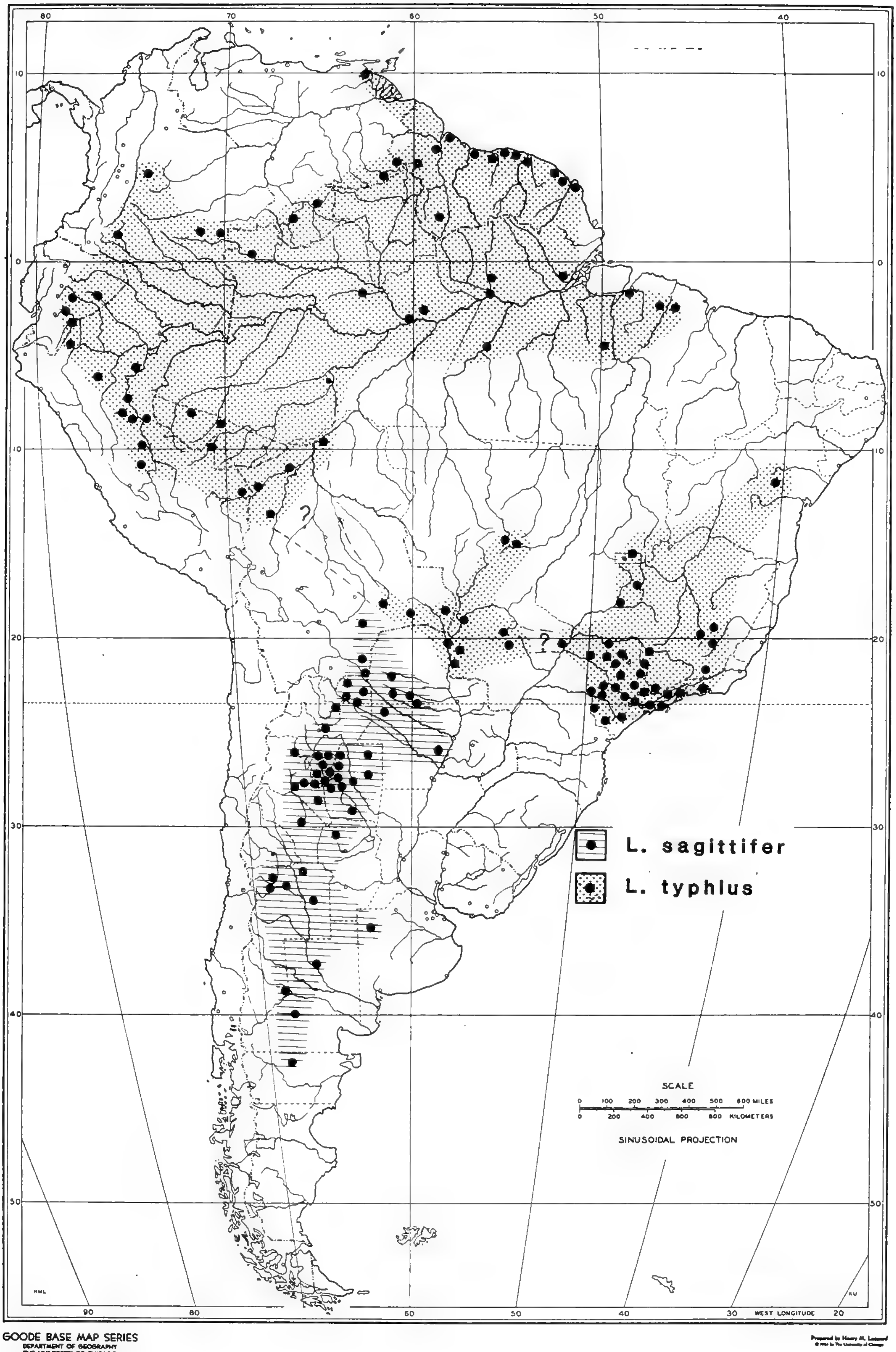
GOODE BASE MAP SERIES
DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF CHICAGO
HENRY M. LEPPARD, EDITOR

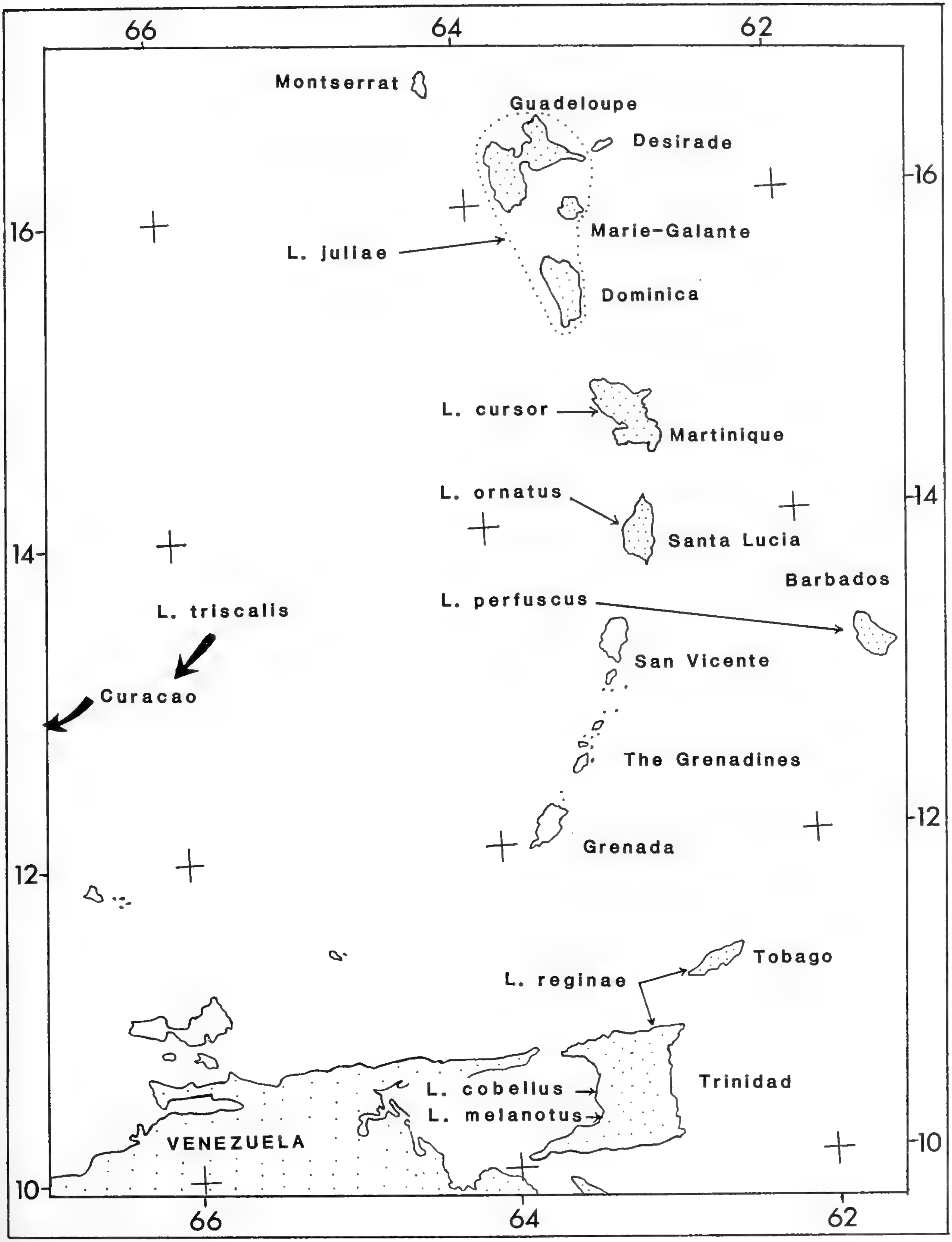
Prepared by Henry M. Leppard



GOODE BASE MAP SERIES
DEPARTMENT OF GEOGRAPHY
THE UNIVERSITY OF CHICAGO
HENRY M. LEPPARD, EDITOR

Prepared by Henry M. Leppard


L. sagittifer
L. typhlus
SCALE
0 100 200 300 400 500 600 MILES
0 200 400 600 800 KILOMETERS
SINUSOIDAL PROJECTION
WEST LONGITUDE



66
64
62
Montserrat
Guadeloupe
Desirade
16
Marie-Galante
L. juliae
Dominica
L. cursor
Martinique
L. ornatus
14
Santa Lucia
Barbados
L. triscalis
L. perfuscus
San Vicente
Curacao
The Grenadines
12
Grenada
Tobago
L. reginae
Trinidad
L. cobellus
L. melanotus
VENEZUELA
10

T

A SURVEY OF OFFICIALLY REJECTED NOMINAL HERPETOLOGICAL TAXA AND THEIR ALLOCATIONS

HOBART M. SMITH & DAVID CHISZAR

Departments of Environmental, Population and Organismic
Biology (HMS) & Psychology (DC)
University of Colorado

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 80

1989

SMITHSONIAN HERPETOLOGICAL INFORMATION SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with the Division of Amphibians and Reptiles.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions on preparation and submission. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC 20560 USA. Please include a self-addressed mailing label with requests.

INTRODUCTION

All herpetologists undertaking taxonomic work should utilize the recent summary (Melville and Smith, 1987) of all names and works placed through 1985 on the Official Lists and Indices of the International Commission on Zoological Nomenclature (available, together with a mimeographed supplement covering 1986-1988, from the International Trust for Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London SW7 5BD, England (£60 or $110), or from the American Association for Zoological Nomenclature, c/o NHB Stop 163, National Museum of Natural History, Washington, DC 20560 U.S.A. ($110 or $100 to members of A.A.Z.N.)).

Although a mandatory reference for much taxonomic work, Melville and Smith's compilation contains no indication of the major group of animals to which individual rejected names belong, and no index to these for any such group. Conserved names are allocated to animal group, and are listed in an index for each group, but rejected names are not so treated. Our goal here is thus to provide a list of all rejected names of amphibians and reptiles, inasmuch as those names, as well as available ones, need to be dealt with in synoptic taxonomic works.

Our list has been drawn exclusively from Melville and Smith (1987), except for names appearing in more recent Opinions, through no. 1517, 1988. Opinion numbers follow only those entries published after 1985. Although assuredly the survey is complete for Opinions 1369 et seq., since we have examined all of them, no attempt has been made to examine all of the first 1368 Opinions, since they are covered in Melville and Smith's work. However, our recognition of suppressed herpetological names depended upon familiarity with them or the cited works, since the major group to which any rejected name pertains was never given (and was not in earlier Indexes). Hence some names may inadvertently have been missed.

A total of 12 family-group names, 87 genus-group names and 101 species-group names is included in the following survey, alphabetically arranged in each group. Appended cross-indexes arrange all 200 names in accordance with the nine orders of amphibians and reptiles to which they belong.

Acknowledgments. We are much indebted to Drs. Kraig Adler and Jeremy D.D. Smith, who kindly reviewed the ms and offered numerous suggestions for its improvement.

FAMILY-GROUP NAMES

AGAMOIDEA Fitzinger, 1826, Neue Classif. Rept.: 11, 17 (an incorrect original spelling for Agamidae Fitzinger, 1826, as

corrected; non-existent nomenclaturally; type genus Agama Daudin, 1802).

AMBYSTOMIDAE Hallowell, 1856, Proc. Acad. Nat. Sci. Philadelphia 8:11 (an incorrect original spelling for Ambystomatidae Hallowell, 1856, as corrected; non-existent nomenclaturally; type genus Ambystoma Tschudi, 1838).

CAECILIIDAE Rafinesque-Schmaltz, 1814, Specc. Sci. Giorn. Encicl. Sicilia 2:104 (an incorrect original spelling of Caeciliaidae Rafinesque-Schmaltz, 1814, as corrected; non-existent nomenclaturally; type genus Caecilia Linnaeus, 1758). Op. 1462.

CECILINIA Rafinesque-Schmaltz, 1814, Specc. Giorn. Encicl. Sicilia 2:104 (an incorrect original spelling of Caeciliaidae Rafinesque-Schmaltz, 1814, as corrected; non-existent nomenclaturally; type genus Caecilia Linnaeus, 1758). Op. 1462.

HATTERIIDAE Cope, 1864, Proc Acad. Nat. Sci. Philadelphia 16:227 (suppressed in priority but not homonymy contexts, making it a jr. synonym of Sphenodontidae Cope, 1870, the earliest available family-group name for its family; type genus Hatteria Gray, 1842, a jr. synonym of Sphenodon Gray, 1831).

LEIOPELMIDAE Turbot, 1942, Trans. Roy. Soc. New Zealand 71:247 (a jr. synonym of Leiopelmatidae Mivart, 1869; type genus Leiopelma Fitzinger, 1861).

LIOPELMATINA Mivart, 1869, Proc. Zool. Soc. London 1869: 291 (an incorrect original spelling of Leiopelmatidae Mivart, 1869, as corrected; non-existent nomenclaturally; type genus Leiopelma Fitzinger, 1861).

LIOPELMIDAE Noble, Am. Mus. Novitates (132): 9(a jr. synonym of Leiopelmatidae Mivart, 1869, as corrected; type genus Leiopelma Fitzinger, 1861).

RHYNCHOCEPHALIDAE Hoffmann, 1881, Bronn's Klass. Ordn. Thierr. 6(3):1065 (invalid because name of its type genus, Rhynchocephalus Owen, 1845, is a jr. homonym of Rhynchocephalus Fischer von Waldheim, 1806, a dipterous insect; Owen's name is also a jr. synonym of Sphenodon Gray, 1831, and Hoffmann's name is a jr. synonym of Sphenodontidae Cope, 1870).

STELLIONIDAE Bell, 1825, Zool. J. 1:457 (ruled invalid because its type genus, Stellio Daudin, 1802, was drawn from Stellio Laurenti, 1786, a nomen dubium because its type species, S. saxatilis, is unidentifiable; neither Laurenti name has been rejected, however, and Stellio has commonly been regarded as an invalid sr. synonym of Agama Daudin, 1802; the family name is likewise an invalid sr. synonym of Agamidae Gray, 1827.

STELLIONIDAE Gray, 1825, Ann Philos. (2) 10:196(invalid as a jr. synonym of Stellionidae Bell, and also for the same reason that Bell's name is invalid).

TUPINAMBIDAE Gray, 1825, Ann. Philos., (2) 10:199 (unavailable and non-existent nomenclaturally because the name of the type genus, Tupinambis Daudin, 1802, was not regarded as valid when the family-group name was established; hence the name Tupinambidae cannot replace the currently accepted name Teiidae Gray, 1827, as it would otherwise do).

GENUS-GROUP NAMES

Acrodytes Fitzinger, 1843, Syst. Rept.: 30 (suppressed in priority but not in homonymy contexts, in favor of Phrynohyas Fitzinger, 1843:30, both having the same type species, Hyla venulosa Laurenti, 1768).

Ahaetulla Gray, 1825, Ann. Philos. (2)10:208 (invalid as a jr. homonym of Ahaetulla Link 1807, type species Ahaetulla mycterizans Link, 1807; a jr. synonym of the earlier Leptophis Bell, 1825, having the same type species, Coluber ahaetulla Linnaeus, 1758).

Amblystoma Agassiz, 1846, Nomencl. Zool. 6(Rept.): 2 (an unjustified emendation and jr. synonym of Ambystoma Tschudi, 1838). The date 1846, given in Opinion 649, is not correct. Vanzolini (1977:64) has shown that the probable year of publication of fascicle 6, containing reptiles and amphibians, was 1844, and certainly not later than 1845.

Amplycephalus Kuhl and van Hasselt, 1822, Algemeene Konsten Letterbode, Haarlem 1: 101 (rejected in priority but not in homonymy contexts to protect Pareas Wagler, 1830, and Cemophora Cope, 1860, since the two species most logically assignable as type of Amplycephalus (no species were originally included in the genus) belong one to Pareas, one to Cemophora, as now interpreted; since application of the rules of the Code was not suspended, Coluber coccineus Blumenbach, 1788, has to be accepted as the type species of Amplycephalus, which is thus now a jr. synonym of Cemophora, of which Blumenbach's name is the type species).

Anaides Baird, 1851, Heck's Icon. Encyclop. Sci. 2:256 (an erroneous original spelling of Aneides Baird, 1851:257, hence non-existent nomenclaturally; also a jr. homonym of Anaides Westwood, 1842, for a beetle). As pointed out by Smith and Smith (1973:11) Heck's vol. 2 was not published in 1849 as

often cited, although as stated on the verso of the title page its publication was authorized in 1849.

Anodon Smith, 1829, Zool. J. 4:143 (although this name is antedated by Anodon Oken, 1815, a mollusc, the latter work has been rejected for nomenclatural purposes (Opinion 417), hence Anodon Smith is available; since its type species, Coluber scaber Linnaeus, 1758, is the same as that of Dasypeltis Wagler, 1830, Smith's name was suppressed in priority but not in homonymy contexts, thereby becoming a jr. synonym of Wagler's name).

Asthenognathus Bocourt, 1884, Bull. Sci. Soc. Philomath. Paris (7)8:149 (a jr. homonym of Asthenognathus Stimpson, 1858, a crustacean; the name is a jr. synonym of Sibon Fitzinger, 1826, since its type species, Petalognathus multifasciatus Jan, 1884, is a jr. synonym of Sibon d. dimidiata (Günther, 1872)).

Autodax Boulenger, 1887, Ann. Mag. Nat. Hist. (5)19:67 (a jr. synonym of Aneides Baird, 1851, having the same type species, Salamandra lugubris Hallowell, 1849; proposed as a substitute for Anaides Baird, 1851 (q.v.)).

Axolot Bonaparte, 1831, Giorn. Arcad. Sci. Lett. Arti 49:77 (suppressed in priority but not in homonymy contexts to protect Ambystoma Tschudi, 1838, of which it is now a jr. synonym, since its type species, Siren pisciformis Shaw, 1802, is a jr. synonym of Ambystoma mexicanum (Shaw, 1798)).

Axolotus Jarocki, 1822, Zoologiia 3:179 (suppressed in priority but not in homonymy contexts to protect Ambystoma Tschudi, 1838, of which it is now a jr. synonym, since its type species, Siren pisciformis Shaw, 1802, is a jr. synonym of Ambystoma mexicanum (Shaw, 1798)).

Berus Oken, 1816, Lehrb. Naturgeschichte 3:234 (Oken's work has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Brachypus Fitzinger, 1826, Neue Classif. Rept.:20,50 (a jr. homonym of Brachypus Meyer, 1814, a bird; a sr. but invalid synonym of Bachia Gray, 1845, since its type species is Brachypus cuvieri Fitzinger, 1826, now Bachia cuvieri (Fitzinger, 1826)).

Centrocercus Fitzinger, 1843, Syst. Rept.:18,86 (a jr. homonym of Centrocercus Swainson, 1832, a bird, hence not valid; a jr. synonym of Uromastyx Merrem, 1820, since its type species is

Uromastix griseus Cuvier, 1827, a jr. synonym of Uromastyx hardwickii Gray, 1827).

Chemelys Rafinesque-Schmaltz, 1832, Atl. J. and Friend of Knowledge 1:64 (suppressed in priority but not in homonymy contexts to protect Rhinoclemmys Fitzinger, 1835, of which it is now a jr. synonym, since its type species, Testudo verrucosa Walbaum, 1782, is a jr. synonym of Rhinoclemmys punctularia (Daudin, 1802)).

Cobra Laurenti, 1768, Specimen Medicum:103 (suppressed in priority but not homonymy contexts to protect Bitis Gray, 1842, of which it is now a jr. synonym, since its type species, Coluber atropos Linnaeus, 1758, now Bitis atropos (Linnaeus) is congeneric with Vipera (Echidna) arietans Merrem, 1820, the type species of Bitis and a conserved List name.)

Constrictor Laurenti, 1768, Specimen Medicum:106 (a jr. synonym of Boa Linnaeus, 1758, having the same type species, Boa constrictor Linnaeus, 1758, of which Constrictor formosissimus Laurenti, 1768, the type species of Constrictor, is a jr. synonym).

Cora Jan, 1863, Elenco Sist. Ofidi:74 (a jr. homonym of Cora Selys, 1853, for an odonate insect; type species Regina kirtlandii Kennicott; Clonophis Cope, 1888, with the same type species, is thus the oldest generic name for that species).

Coriudo Fleming, 1822, Phil. Zool. 2:271 (a jr. synonym of Dermochelys Blainville, 1816, having the same type species, Testudo coriacea Vandelli, 1761).

Crocodilus Bertrand, 1763, Dict. Univ. Foss. Propres Foss. Accid. 1:183 (Bertrand's work has been rejected for nomenclatural purposes (Opinion 592), and therefore names appearing therein do not exist in nomenclatural contexts; none should be assigned in synonymy to anything).

Dendraspis Fitzinger, 1843, Syst. Rept.:28 (suppressed in priority but not in homonymy contexts in order to protect Ophiophagus Günther, 1864, type species Hamadryas elaps Günther, 1858, a jr. synonym of Naja hannah Cantor, 1836, of which the type species of Dendraspis [not to be confused with Dendroaspis Schlegel, 1848], Naja bungarus Schlegel, 1837, is also a jr. synonym).

Dendrophis Boie, 1826, in Fitzinger, Neue Classif. Rept.:29 (a jr. synonym of Leptophis Bell, 1825, having the same type species, Coluber ahaetulla Linnaeus, 1758).

Dermatochelys Wagler, 1830, Natürl. Syst. Amph.:133 (a jr. synonym of Dermochelys Blainville, 1816, having the same type species, Testudo coriacea Vandelli, 1761).

Dermochelis Lesueur, 1829, in Cuvier, Règne Anim., Ed. 2, 2:14 (an incorrect subsequent spelling of Dermochelys Blainville, 1816; without nomenclatural status but commonly cited in synonymy of the latter name).

Diemichylus Cope, 1859, Proc. Acad. Nat. Sci. Philadelphia 11:128 (an incorrect subsequent spelling of Diemictylus Rafinesque, 1820; without nomenclatural status but commonly cited in synonymy of Notophthalmus Rafinesque, 1820, of which Diemictylus is a jr. synonym).

Diemyctelus Günther, 1901, Biologia Centrali-Am., Rept. Batr.:294 (an incorrect subsequent spelling of Diemictylus Rafinesque, 1820; without nomenclatural status but commonly cited in synonymy of Notophthalmus Rafinesque-Schmaltz, 1820, of which Diemictylus is a jr. synonym).

Diemyctylus Hallowell, 1856, Proc. Acad. Nat. Sci. Philadelphia 8:6-11 (an unjustified emendation of Diemictylus Rafinesque, 1820; an available but invalid jr. synonym of Notophthalmus Rafinesque, 1820, of which Diemictylus is a jr. synonym).

Discosomus Oken, 1816, Lehrb. Naturgeschichte 3:310 (Oken's work has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Draco Oken, 1816, Lehrb. Naturgeschichte 3:273 (same fate as Discosomus, preceding).

Dracunculus Wiegmann, 1834, Herp. Mex.:14 (a jr. homonym of Dracunculus Reichard, 1759, a nematode; type species Draco lineatus Daudin, 1802; hence a jr. synonym of Draco Linnaeus, 1758).

Dryinus Merrem, 1820, Tent. Syst. Amph.:15,136 (a jr. homonym of Dryinus Latreille, 1804, an insect, and a jr. synonym of Ahaetulla Link, 1807, having the same type species, A. mycterizans Link, 1807).

Dryophis Dalman, 1823, Anat. Entomol.:7 (a jr. synonym of Ahaetulla Link, 1807, having the same type species, A. mycterizans Link, 1807).

Enhydrus Rafinesque-Schmaltz, 1815, Analyse Nature:77 (an incorrect subsequent spelling of Enhydris Latreille, 1802;

without nomenclatural status but commonly cited in synonymy of the latter name).

Epirhexis Cope, 1866, J. Acad. Nat. Sci. Philadelphia (2)6:96 (rejected for priority but not homonymy purposes (Opinion 1024), to protect Syrrhophus Cope, 1878, since its type species, Batrachyla longipes Baird, 1859, is congeneric with the type species of Syrrhophus, namely S. marnockii Cope, 1878).

Eremiophilus Fitzinger, 1843, Syst. Rept.:32 (rejected in priority but not homonymy contexts in order to protect Kassina Girard, 1853, both having the same type species, Cystignathus senegalensis Duméril and Bibron, 1841).

Hamadryas Cantor, 1836, Asiatick Res. 19:87 (a jr. homonym of Hamadryas Hübner, 1808, a lepidopteran insect, and a sr. synonym, although invalid, of Ophiophagus Günther, 1864, type species Naja elaps Schlegel, 1843, a jr. synonym of Hamadryas hannah Cantor, 1836, type species of its genus). The original description of Hamadryas Cantor did not appear, as indicated in Opinion 789, in 1838 (Cantor, 1838), but in 1836 (Cantor, 1836). The 1836 description named the sole species (hence the type species) H. hannah, whereas the 1838 description named the sole species H. ophiophagus, without mention of the earlier name H. hannah.

Hatteria Gray, 1842, Zool. Misc. (2):72 (a jr. synonym of Sphenodon Gray, 1831, having the same type, Hatteria punctata Gray, 1842).

Herpeton Oken, 1816, Lehrb. Naturgeschichte 3:282 (this work by Oken has been rejected for nomenclatural purposes, hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Ibiba Gray, 1825, Ann. Phil. 10:209 (rejected in priority but not homonymy contexts to protect Boiga Fitzinger, 1826, since both have the same type species, Coluber irregularis Merrem). Op. 1374.

Liopelma Günther, 1868, Proc. Zool. Soc. London 36:478 (an unjustified emendation of Leiopelma Fitzinger, 1861; an available but invalid jr. synonym of the latter name).

Mabouia Cuvier, 1829, Règne Animal, Ed. 2, 2:62 (an incorrect subsequent spelling of Mabuya Fitzinger, 1826; without nomenclatural status but commonly cited in synonymy of the latter name).

Mabouya Duméril and Bibron, 1839, Erp. Gén. 5:663, 671 (an incorrect subsequent spelling of Mabuya Fitzinger, 1826; without nomenclatural status but commonly cited in synonymy of the latter name).

Mabuia Cuvier, 1829, Règne Animal, Ed. 2, 2:64 (an incorrect subsequent spelling of Mabuya Fitzinger, 1826; without nomenclatural status but commonly cited in synonymy of the latter name).

Mabuya Rafinesque-Schmaltz, 1815, Analyse Nature:76 (a nomen nudum, without nomenclatural status, antedating but not displacing Mabuya Fitzinger, 1826).

Notophthalma Gray, 1858, Proc. Zool. Soc. London 26:138 (an incorrect subsequent spelling of Notophthalmus Rafinesque, 1820; without nomenclatural status but commonly cited in synonymy of the latter name).

Notophthalmia Gray, 1850, Cat. Batr. Grad. Brit. Mus.:22 (an incorrect subsequent spelling of Notophthalmus Rafinesque, 1820; without nomenclatural status but commonly cited in synonymy of the latter name).

Notopthalmus Baird, 1850, J. Acad. Nat. Sci. Philadelphia (2)1(4):284 (an incorrect subsequent spelling of Notophthalmus Rafinesque, 1820; without nomenclatural status but commonly cited in synonymy of the latter name).

Oedipus Tschudi, 1838, Mém. Soc. Sci. Nat. Neuchâtel 2:28 (invalid as a jr. homonym of Oedipus Berthold, 1827, for an orthopteran insect, itself suppressed in priority but not in homonymy contexts to restore order in nomenclature of the genus now accepted as Bolitoglossa Duméril, Bibron and Duméril, 1854, whose type species is Salamandra platydactylus Gray, 1831, the same as for Oedipus Tschudi).

Ophidion Pomel, 1853, Cat. Méth. Vert. Foss. Loire:128 (a jr. homonym of Ophidion Linnaeus, 1758, for a fish; Ophidioniscus a substitute name, Kuhn, 1963; type species Ophidion antiquus Pomel, 1853; a fossil snake probably referable to Boidae).

Palaeotriton Fitzinger, 1837, Ann. Wien. Mus. Naturgesch. 2:186 (rejected in priority but not homonymy contexts to protect Andrias Tschudi, 1837, type Salamandra scheuchzeri Holl, 1831; Palaeotriton type species Salamandra gigantea Meyer, 1832, a jr. synonym of S. scheuchzeri and also a jr. homonym of Salamandra gigantea Barton, 1808, a jr. synonym of Cryptobranchus alleganiensis Daudin, 1802).

Palmatotriton Smith, 1945, Ward's Nat. Sci. Bull. 19(1):4 (ruled a nomen nudum, without nomenclatural status; now incorrectly cited as a jr. synonym of Bolitoglossa Duméril, Bibron and Duméril, 1854, based on Bolitoglossa rufescens (Cope, 1869)).

Passerita Gray, 1825, Ann. Philos. 26:208 (a jr. synonym of Ahaetulla Link, 1807, both having the same type species, A. mycterizans Link, 1807).

Petrodactylus Oken, 1816, Lehrb. Naturg. 3:index (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Philhydrus Brookes, 1828, Prodr. Syn. Anim. Brookesian Mus.:16 (rejected in priority but not homonymy contexts to protect Ambystoma Tschudi, 1838; type species Siren pisciformis Shaw, 1802, a jr. synonym of Gyrinus mexicanus Shaw, 1798).

Philodendros Fitzinger, 1843, Syst. Rept.:26 (rejected in priority but not homonymy contexts to protect Dromophis Peters, 1869, both having the same type species, Dendrophis praeornata Schlegel, 1837). Op. 1384.

Philodendrus Agassiz, 1846, Nomencl. Zool. Index Univ.:285 (an unjustified emendation of Philodendros Fitzinger, 1843; an available but invalid jr. synonym of Dromophis Peters, 1869). Op. 1384.

Phyllhydrus Gray, 1831, in Griffith's Cuvier, Anim. Kingd. 9, Syn. Spec.: 108 (rejected in priority but not homonymy contexts to protect Ambystoma Tschudi, 1838; type species Siren pisciformis Shaw, 1802, a jr. synonym of Gyrinus mexicanus Shaw, 1798).

Propus Oken, 1816, Lehrb. Naturg. 3:287 (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Proteocordylus Eichwald, 1831, Zoologia Specialis (3):165 (rejected in priority but not in homonymy contexts to protect Andrias Tschudi, 1837; type species P. diluvii Eichwald, 1831, a jr. synonym of Salamandra scheuchzeri Holl, 1831, type species of Andrias.

Pterodactylus Oken, 1816, Lehrb. Naturg. 3:312 (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything).

Rhinaspis Fitzinger, 1843, Syst. Rept.:25 (ruled a nomen nudum, as its type species, R. proboscideum Fitzinger, 1843, is a nomen nudum; neither name exists nomenclaturally but both are commonly cited in the synonymy of Simophis Peters, 1860, and its type species, Heterodon rhinostoma Schlegel, 1837; their synonymy includes Jan's 1863 occupation of Fitzinger's nomina nuda, as Rhinaspis proboscideus).

Rhinosimus Duméril, Bibron and Duméril, 1854, Erp. Gén. 7:991 (a jr. homonym of Rhinosimus Latreille, 1802, a genus of beetles; type species Rhinosimus guerini Duméril, Bibron and Duméril, 1854, now placed in Phimophis Cope, 1860, as its type species).

Rhinostoma Fitzinger, 1826, Neue Classif. Rept.:56,29 (rejected in priority but not homonymy contexts to protect Lystrophis Cope, 1885, type species Heterodon dorbignyi Duméril, Bibron and Duméril, of which Vipera nasua Wagler, 1830, is a jr. synonym through rejection in priority but not homonymy contexts; Rhinostoma was diagnosed but without an acceptable species, although two nomina nuda were named; subsequently Vipera nasua was designated type species).

Rhynchocephalus Owen, 1845, Trans. Geol. Soc. London (2)7:78 (a jr. synonym of Sphenodon Gray, 1831, having the same type species, Hatteria punctata Gray, 1842; also a jr. homonym of Rhynchocephalus Fischer von Waldheim, 1806, for a dipterous insect).

Scinci Oken, 1816, Lehrb. Naturg. 3:300 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited in the synonymy of anything).

Scincorum Oken, 1816, Lehrb. Naturg. 3:index (as in the preceding account for Scinci).

Siredon Wagler, 1830, Syst. Amph.:209,210 (rejected in priority but not in homonymy contexts to protect Ambystoma Tschudi, 1838; type species S. axolotl Wagler, 1830, a jr. synonym of Gyrinus mexicanus Shaw, 1898, now in Ambystoma).

Sirena Fischer von Waldheim, 1808, Zoognosia, Ed. 2:tab. iii (an unjustified emendation of Siren Linnaeus, 1766; an available but invalid jr. synonym of the latter name).

Sirene Oken, 1816, Lehrb. Naturg. 3:187 (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of anything; the name is also an unjustified emendation of Siren Linnaeus, 1766, as well as a jr. homonym of

an earlier, identical emendation, Sirene Link, 1794, which is a citeable jr. synonym of Siren).

Sirenodon Wiegmann, 1832, in Wiegmann and Ruthe, Handb. Zool., Ed. 2:204 (rejected in priority but not homonymy contexts to protect Ambystoma Tschudi, 1838; type species Siredon axolotl Wagler, 1830, a jr. synonym of Gyrinus mexicanus Shaw, 1798, now assigned to Ambystoma).

Sphaenodon Gray, 1831, Zool. Misc. (1):14 (ruled an incorrect original spelling, non-existent nomenclaturally, of Sphenodon Gray, 1831, type species, Hatteria punctata Gray, 1842; emended first to Sphenodon by Gray, 1872, and thus accepted by the ICZN).

Sphalerosophis Jan, 1865, in Filippi, Note Viaggio Persia:356 (an incorrect original spelling and jr. synonym of Spalerosophis Jan, 1865; Sphalerosophis Jan is therefore non-existent nomenclaturally).

Sphargis Merrem, 1820, Tent. Syst. Amph.:19 (a jr. synonym of Dermochelys Blainville, 1816, having the same type species, Testudo coriacea Vandelli, 1761; in the case of Sphargis, through a jr. synonym of T. coriacea, S. mercurialis Merrem, 1820).

Stegoporus Wiegmann, 1832, in Wiegmann and Ruthe, Handb. Zool., Ed. 2:204 (rejected in priority but not homonymy contexts in order to protect Ambystoma Tschudi, 1838; proposed as a substitute for Siredon Wagler, 1830, a jr. synonym of Gyrinus mexicanus Shaw, 1898, now in Ambystoma).

Stellio Daudin, 1802, Hist. Nat. Rept. 4:5 (a jr. homonym of Stellio Laurenti, 1768, a nomen dubium because its type species, S. saxatilis, is unidentifiable; neither Laurenti name has been rejected officially, however, and Stellio Laurenti has commonly been regarded as an invalid sr. synonym of Agama Daudin, 1802).

Tachyophis Mertens, 1934, Arch. Naturg. (n.f.) 3:197 (invalid as a jr. homonym of Tachyophis Rochebrune, 1884, a fossil snake; type species Coluber pictus Gmelin, 1788, now placed in Dendrelaphis Boulenger, 1890, as a valid species).

Tapaia Oken, 1816, Lehrb. Natur. 3:vi (index) (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, as of Oken, 1816, and should not be cited in the synonymy of anything, although commonly referred to Phrynosoma Wiegmann, 1828; also an incorrect original spelling of Tapaia Oken, 1816, q. v.).

Tapaia Oken, 1817, Isis von Oken 1817:1183 (rejected in priority but not in homonymy contexts to protect Phrynosoma Wiegmann, 1828, having the same type species, Lacerta orbicularis Linnaeus, 1758).

Tapaja Oken, 1816, Lehrb. Naturg. 3:295 (this work by Oken was rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of anything).

Tapaya Fitzinger, 1826, Neue Classif. Rept.:17 (rejected in priority but not homonymy contexts to protect Phrynosoma Wiegmann, 1828, having the same type species, Lacerta orbicularis Linnaeus, 1758).

Tapaya Oken, 1817, Isis von Oken 1817:1183 (an incorrect original spelling of Tapaia Oken, 1817, hence non-existent nomenclaturally).

Tapayia Gray, 1825, Ann. Philos. 26:197 (rejected in priority but not in synonymy contexts to protect Phrynosoma Wiegmann, 1828, having the same type species, Lacerta orbicularis Linnaeus, 1758).

Thermophilus Fitzinger, 1843, Syst. Rept.:21 (rejected in priority but not homonymy contexts to protect Ichnotropis Peters, 1854, both having the same type species, Algyra capensis A. Smith, 1838, in Thermophilus via Fitzinger's Tropidosaura capensis "Duméril and Bibron," in error for A. Smith, and in Ichnotropis via I. macrolepidota Peters, 1854, a jr. synonym of A. capensis Smith). Op. 1422.

Tortrix Oppel, 1811, Ann. Mus. Nat. Hist. Nat. Paris 16(95):377,381 (rejected as a jr. homonym of Tortrix Linnaeus, 1758, a lepidopteran insect; type species Anguis scytale Linnaeus, 1758, still valid, now referred as type species to the genus Anilius Oken, 1816, of which Tortrix Oppel is a sr. synonym, but invalid).

Tritropis Fitzinger, 1843, Syst. Rept.:59 (rejected in priority but not in homonymy contexts to protect Chalarodon Peters, 1854, having the same type species, Tropidogaster blainvillii Duméril and Bibron, 1837).

Tropidogaster Duméril and Bibron, 1837, Erp. Gen. 4:329 (rejected in priority but not in homonymy contexts to protect Chalarodon Peters, 1854, having synonymous type species; see blainvillii in the species-group list)

Typhlina Wagler, 1830, Nat. Syst. Amph.:196 (rejected in priority but not in homonymy contexts to protect Leptotyphlops Fitzinger, 1843, type species Typhlops nigricans Schlegel, 1839, in which genus Anguis septemstriatus Schneider, 1801, the type species of Typhlina, also belongs).

Zygnis Oken, 1816, Lehrb. Naturg. 3:284 (this work by Oken has been rejected for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of anything).

SPECIES-GROUP NAMES

alamose, Kinosternon, Pritchard, 1979, Encyclopedia of Turtles: 556 (rejected in both priority and homonymy contexts to protect K. alamosae Berry and Legler, 1980; a non-existent name, nomenclaturally, that should not be cited as a synonym of anything).

alleghaniensis, Abranchus, Harlan, 1825, Ann. Lyceum Nat. Hist. New York 1(18):271 (an unjustified emendation and jr. synonym of Salamandra alleganiensis Daudin, 1803, now Cryptobranchus alleganiensis (Daudin)).

alligator, Lacerta, Blumenbach, 1779, Handb. Naturg. 1:263 (rejected in priority but not in homonymy contexts to protect Crocodilus mississippiensis Daudin, 1801, now Alligator mississippiensis (Daudin), of which it is a jr. synonym).

areolata, Lacerta, Houttuyn, 1787, Anim. Mus. Houtt. Index: 24 (this work by Houttuyn was suppressed for nomenclatural purposes (Opinion 380), hence this name should not be cited in the synonymy of anything, as it does not exist nomenclaturally, and is in addition unidentifiable).

atratus, Coluber, Gmelin, 1788, in Linnaeus, Syst. Nat., Ed. 13, 1: 1103 (rejected in both priority and homonymy contexts, by Gmelin or any other author, prior to erection of Coluber atratus Hallowell, 1845, now Ninia atrata (Hallowell), in order to protect the latter name; previous usages do not exist nomenclaturally and should not be cited in the synonymy of anything).

besseri, Anguis, Andrzejowski, 1832, Nouv. Mém. Soc. Imp. Nat. Moscou (2)2:338, tab. 22, fig. 7, tab. 24 (rejected in priority but not in homonymy contexts to protect Otophis eryx colchica Nordmann, 1840, now Anguis fragilis colchica, of which A. besseri is now a jr. synonym).

bibronii, _Trapelus_ (_Psammorrhoa_), Fitzinger, 1843, Syst. Rept.: 81 (rejected in both priority and homonymy contexts to protect _Agama bibronii_ A. Duméril in Duméril and Bibron, 1851; Fitzinger's name was a sr. secondary homonym of Duméril's, having been transferred to the synonymy of _Agama hispida aculeata_ Merrem, 1820; it does not now exist nomenclaturally).

bilineatus, _Psammophis moniliger_, Peters, 1867, Monatsb. Akad. Wiss. Berlin 1867: 237 (rejected in priority but not in homonymy contexts to protect _P. sibilans subtaeniata_ Peters, 1882, now _P. subtaeniata_ Peters, of which _bilineatus_ is now a jr. synonym).

blainvillii, _Tropidogaster_, Duméril and Bibron, 1837, Erp. Gen. 4:300 (rejected in priority but not in homonymy contexts to protect _Chalarodon madagascariensis_ Peters, 1854, of which _blainvillii_ is now a jr. synonym).

bosci, _Rana_, Bory de St. Vincent, 1828, Rés. Erp.: 266 (rejected in priority but not in homonymy contexts, to protect _Rana esculenta perezi_ Seoane, 1885, now _Rana perezi_ Seoane, of which the former is now a jr. synonym).

caesius, _Coluber_, Cloquet, 1818, Dict. Sci. Nat. 11: 201 (rejected in priority but not in homonymy contexts to protect _Coluber irregularis_ Leach, 1819, now _Philothamnus irregularis_ (Leach), of which the former is now a jr. synonym).

californiana, _Aspidonectes_, Rivers, 1889, Proc. California Acad. Sci. (2)2: 233-236 (rejected in priority but not in homonymy contexts to protect _Trionyx steindachneri_ Siebenrock, 1906, of which the former is now a jr. synonym).

chiametla, _Coluber_, Shaw, 1802, Gen. Zool. 3(2): 440 (rejected in priority but not in homonymy contexts to protect _Herpetodryas margaritiferus_ Schlegel, 1838, now _Drymobius margaritiferus_ (Schlegel), and _Drymobius margaritiferus fistulosus_ Smith, 1942, of which Shaw's name is now a jr. synonym).

cincolor, _Crotalus durissus_, Notestein, 1905, 7th Rep. Michigan Acad. Sci.: 123 (ruled non-existent nomenclaturally because cited only in synonymy, of _Crotalus horridus_ Linnaeus, 1758; presumably a lapsus for _concolor_, and presumably drawn from Jan, 1859, although the only source stated was "J").

cinereous, _Crotalus_, Le Conte, 1852, _in_ Hallowell, Proc. Acad. Nat. Sci. Philadelphia 5(5): 177 (rejected in priority but not in homonymy contexts to protect _Crotalus atrox_ Baird and Girard, 1853, of which the former in now a jr. synonym).

coerulea, Rana, Houttuyn, 1787, Anim. Mus. Houtt. Index: 19 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally and is unidentifiable anyhow).

colonorum, Agama, Daudin, 1802, Hist. Nat. Rept. 3: 336 (a jr. objective synonym of Lacerta agama Linnaeus, 1758, now A. a. agama (Linnaeus)).

concolor, Crotalus durissus, Garman, 1883, Mem. Mus. Comp. Zool. 8: 175 (ruled non-existent nomenclaturally because cited only in synonymy, of C. horridus Linnaeus, 1758; name attributed to Jan, 1859).

concolor, Crotalus durissus, Gloyd, 1940, Spec. Publ. Chicago Acad. Sci. 4:171 (ruled non-existent nomenclaturally because cited only in synonymy, of C. viridis decolor Klauber, 1930; name attributed to Jan, 1859).

concolor, Crotalus durissus, Jan, 1859, Rev. Mag. Zool. (2)10: 153 (ruled non-existent nomenclaturally because a nomen nudum).

cruciger, Bufo, Oken, 1816, Lehrb. Naturg. 3:209 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name is non-existent nomenclaturally and should not be cited in the synonymy of any species).

cupreus, Coluber, Houttuyn, 1787, Anim. Mus. Houtt. Index: 28 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally and is unidentifiable).

diglossis, Chirotes, Saenz, 1869, An. Univ. Nac. Est. Unidos Colombia 1869: 63 (rejected in priority but not in homonymy contexts to protect Heteroclonium bicolor Cope, 1896, now Bachia bicolor (Cope), of which Saenz' name is now a jr. synonym). Op. 1482.

doliatus, Coluber, Linnaeus, 1766, Syst. Nat., Ed. 12, 1:376 (rejected in priority but not in homonymy contexts to protect Coluber coccineus Blumenbach, 1788, now Cemophora coccinea (Blumenbach), of which doliatus is now a jr. synonym).

dorsata, Testudo, Schoepff, 1801, Naturg. Schildk.: 158 (rejected in priority but not in homonymy contexts to protect Testudo punctularia Daudin, 1802, now Rhinoclemmys punctularia (Daudin), of which dorsata is now a jr. synonym).

dracaena, Lacerta, Linnaeus, 1766, Syst. Nat., Ed. 12, 1: 250 (rejected in priority but not in homonymy contexts to protect

Tupinambis bengalensis Daudin, 1802, now Varanus bengalensis (Daudin), of which dracaena is now a jr. synonym).

dubia, Amphisbaena, Rathke, 1863, Abh. K.-Bayer. Akad. Wiss. München 9(1): 128 (rejected in both priority and homonymy contexts to protect Amphisbaena dubia Müller, 1924; Rathke's name is non-existent nomenclaturally but was based on A. fuliginosa Linnaeus, 1758, and, more precisely, A. f. amazonica Vanzolini, 1951).

elaphis, Coluber, Shaw, 1802, Gen. Zool. 3: 450 (rejected in priority but not in homonymy contexts to protect Coluber scalaris Schinz, 1822, now Elaphe scalaris (Schinz), of which Shaw's name in now a jr. synonym).

ereticauda, Triton, Eschscholtz, 1833, Zool. Atlas 5: 14 (rejected in priority but not in homonymy contexts to protect Salamandra lugubris Hallowell, 1849, now Aneides lugubris (Hallowell), of which Eschscholtz' name is now a jr. synonym).

erythronota, Salamandra, Rafinesque, 1818, Sci. J. 1: 25 (rejected in priority but not in homonymy contexts to protect Salamandra cinerea Green, 1818, now Plethodon cinereus (Green), of which Rafinesque's name is now a jr. synonym).

fasciata, Lacerta, Houttuyn, 1787, Anim. Mus. Houtt. Index: 24 (this work by Houttuyn has been rejected for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally, and besides is unidentifiable).

fasciata, Rana, Burchell, 1824, Travels Interior South Africa 2: 32 (rejected in priority but not in homonymy contexts to protect Rana grayi Smith, 1849, of which Burchell's name is now a jr. synonym; in addition, all other uses of Rana fasciata prior to that of Smith, 1849, are similarly rejected).

flava, Testudo, Lacépède, 1788, Hist. Nat. Quad. Ovip. Serpens 1, Synops. Meth.: 135, tab. 16 (rejected in priority but not in homonymy contexts to protect Cistudo blandingii Holbrook, 1838, now Emydoidea blandingii (Holbrook), of which Lacépède's name is now a jr. synonym).

flavescens, Amphisbaena, Houttuyn, 1787, Anim. Mus. Houtt. Index: 29 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally; it is also unidentifiable).

foetidus, Coluber, Güldenstedt, 1801, in Georgi, Geogr.-Phys. Naturh. Beschreib. Russ. Reich. 3(7): 1884 (rejected in priority but not in homonymy contexts to protect Pelias renardi

Christoph, 1861, now _Vipera ursinii renardi_, of which _foetidus_ is now a jr. synonym).

formosisissimus, _Constrictor_, Laurenti, 1768, Specimen Medicum...: 107 (a jr. objective synonym of _Boa constrictor_ Linnaeus, 1758).

funebris, _Salamandra_, Bory de St. Vincent, 1828, Rés. Erp.: 236 (rejected in priority but not in homonymy contexts to protect _Pleurodeles waltl_ Michahelles, 1830, of which _funebris_ is now a jr. synonym).

galliwasp, _Scincus_, Oken, 1816, Lehrb. Naturg. 3: 299(this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name is non-existent nomenclaturally and should not be cited in the synonymy of any species).

graecus, _Stellio_, Oken, 1816, Lehrb. Naturg. 3: 202(as in the preceding account of _galliwasp_)

granulatus, _Anguis_, Houttuyn, 1787, Anim. Mus. Houtt. Index: 29 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally; it is also unidentifiable).

grisea, _Lacerta_, Oken, 1816, Lehrb. Naturg. 3: 303 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited in the synonymy of any species).

indicus, _Crocodilus vulgaris_, Gray, 1831, Syn. Rept.: 58 (rejected in priority but not in homonymy contexts to protect _Crocodilus palustris_ Lesson, 1831, now _Crocodylus palustris_ (Lesson), of which Gray's name is now a jr. synonym).

italicus, _Stellio_, Oken, 1816, Lehrb. Naturg. 3: 204 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

jacapara, _Coluber_, Houttuyn, 1787, Anim. Mus. Houtt. Index: 26 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally: it is also unidentifiable).

lancifer, _Trigonocephalus_, Oken, 1816, Lehrb. Naturg. 3: 270 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

leberis, Coluber, Linnaeus, 1758, Syst. Nat., Ed. 10, 1:216 (rejected in priority but not in homonymy contexts to protect Coluber occipitomaculatus Storer, 1839 (now Storeria occipitomaculata (Storer), of which it is now a jr. synonym).

lepidopus, Bipes, Oken, 1816, Lehrb. Naturg. 3: 249 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally and should not be cited as a synonym of any species).

lucius, Crocodilus (Alligator), Cuvier, 1807, Ann. Mus. Nat. Hist. Nat. Paris 10: 28 (a jr. synonym of Crocodilus mississippiensis Daudin, 1801, now Alligator mississippiensis (Daudin)).

lutescens, Triturus, Rafinesque-Schmaltz, 1832, Atlantic J. Friend of Knowledge 1: 121 (rejected in priority but not in homonymy contexts to protect Gyrinophilus porphyriticus duryi Weller, 1930, of which it is now a jr. synonym).

marmorata, Amphisbaena, Houttuyn, 1787, Anim. Mus. Houtt. Index: 30 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name does not exist nomenclaturally and should not be cited in the synonymy of any species; it is also unidentifiable).

maxima, Rana, Laurenti, 1768, Specimen Medicum...: 32 (a jr. synonym of Rana boans Linnaeus, 1758, now Hyla boans (Linnaeus)).

melanepis, Coluber, Rafinesque-Schmaltz, 1814, Précis Découv. Trav. Semiolog.: 15 (rejected in priority but not in homonymy contexts to protect Coluber viridiflavus carbonarius Bonnaparte, 1833, now Hemorrhois viridiflava carbonaria (Bonaparte), of which melanepis is now a jr. synonym).

melanocercus, Drymarchon corais, Smith, 1941, J. Washington Acad. Sci. 31: 437, 434 (a jr. objective synonym of Spilotes melanurus Duméril, Bibron and Duméril, 1854, now Drymarchon corais melanurus (Duméril, Bibron and Duméril); originally proposed as a substitute for the latter name, supposed to be invalidated by its senior secondary homonym, Coluber melanurus Schlegel, 1837, via Spilotes melanurus (Schlegel) Gray, 1858).

meleagris, Testudo, Shaw, 1793, Nat. Misc.: tab. 44 (rejected in priority but not in homonymy contexts to protect Cistudo blandingii Holbrook, 1838, now Emydoidea blandingii (Holbrook), of which Shaw's name is now a jr. synonym).

mercurialis, Sphargis, Merrem, 1820, Tent. Syst. Amph.: 19 (a jr. objective synonym of Testudo coriacea Vandelli, 1761, now Dermochelys coriacea (Vandelli)).

michahellesii, Podarcis, Fitzinger, 1864, in Erber, Verh. Zool.-Bot. Ges. Wien, 14: 703 (rejected in priority but not in homonymy contexts to protect Lacerta viridis trilineata Bedriaga, 1886, now L. trilineata (Bedriaga), of which Fitzinger's name is now a jr. synonym).

mildei, Amphisbaena, Peters, 1878, Monatsb. K. Preuss. Akad. Wiss. 1878: 778-781 (rejected in priority but not in homonymy contexts to protect Amphisbaena trachura Cope, 1885, now A. darwini trachura, of which Peters' name is now a jr. synonym).

minor, Testudo mydas, Suckow, 1798, Anfangsgr. Naturg. Thiere 3: 30 (rejected in priority but not in homonymy contexts to protect Thalassochelys (Colpochelys) kempii Garman, 1880, now Lepidochelys kempii (Garman), of which Suckow's name is now a jr. synonym).

mississipiensis, Alligator, Gray, 1831, Syn. Rept.: 62 (an incorrect subsequent spelling of Crocodilus mississippiensis Daudin, 1801, now Alligator mississippiensis (Daudin), without nomenclatural status).

mississipiensis, Crocodilus, Daudin, 1801, Hist. Nat. Rept. 2: 412 (an incorrect original spelling, non-existent nomenclaturally, of Crocodilus mississippiensis Daudin, 1801, now Alligator mississippiensis (Daudin).

mitrata, Rana, Houttuyn, 1787, Anim. Mus. Houtt. Index: 19 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name is nomenclaturally non-existent and should not be assigned to any species; in addition the name is unidentifiable).

molochina, Psammophis, Berthold, 1846, Mitt. Nachr. G.A. Univ. K. Ges. Wiss. Göttingen Zool.Mus. Göttingen 1846: 143, 144 (rejected in priority but not in homonymy contexts to protect Philodryas nattereri Steindachner, 1870, of which Berthold's name is now a jr. synonym).

monitor, Lacerta, Linnaeus, 1758, Syst. Nat., Ed. 10, 1:201 (rejected in priority but not in homonymy contexts to protect Stellio salvator Laurenti, 1768, now Varanus (V.) salvator (Laurenti), of which monitor is now a jr. synonym).

multimaculata, Crotalus lugubris, Jan, 1863, Elenco Sist. Ofidi: 124 (rejected in priority but not in homonymy contexts to

protect Caudisona polysticta Cope, 1865, now Crotalus polystictus (Cope), of which Jan's name is now a jr. synonym).

nasua, Vipera, Wagler, 1830, Natürl. Syst. Amph.: 171 (rejected in priority but not in homonymy contexts to protect Heterodon dorbignyi Duméril, Bibron and Duméril, 1854, now Lystrophis dorbignyi (Duméril, Bibron and Duméril), of which nasua is now a jr. synonym).

neocaesariensis, Proteus, Green, 1818, J. Acad. Nat. Sci. Philadelphia, 1:358 (rejected in priority but not in homonymy contexts to protect Salamandra tigrina Green, 1825, now Ambystoma t. tigrinum (Green), of which Green's name, of 1818, is now a jr. synonym).

niger, Scytale, Daudin, 1803, Hist. Nat. Gén. Partic. Rept.: 342 (based on what is now known as Heterodon platirhinos Latreille, 1801, but rejected in both priority and homonymy contexts, to protect Scytale neuwiedii nigrum Duméril, Bibron and Duméril, 1854, now Pseudoboa nigra (Duméril, Bibron and Duméril); Daudin's name is now non-existent nomenclaturally).

nigricollis, Coluber, Dwigubskij, 1832, Opyt Estestv. Istorii 3:26 (rejected in priority but not in homonymy contexts to protect Coronella modesta Martin, 1838, now Eirenis modesta (Martin), of which Dwigubskij's name is now a jr. synonym).

oaxacae, Kinosternon, Pritchard, 1979, Encycl. Turtles: 557 (rejected in priority but not in homonymy contexts to protect Kinosternon oaxacae Berry and Iverson, 1980, of which Pritchard's name is now a jr. synonym).

ocellata, Lacerta, Houttuyn, 1787, Anim. Mus. Houtt. Index: 24 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name is nomenclaturally non-existent and should not be assigned to any species; in addition the name is unidentifiable).

ocellatus, Draco, Oken, 1816, Lehrb. Naturg. 3:277 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

operculata, Siren, Beauvois, 1799, Trans. Am. Philos. Soc. 4:277-281, figs. 1-4 (rejected in priority but not in homonymy contexts to protect Salamandra tigrina Green, 1825, now Ambystoma t. tigrinum (Green), of which Beauvois' name is now a jr. synonym).

oryzicola, Berus, Oken, 1816, Lehrb. Naturg. 3:248 (this work by Oken has been suppressed for nomenclatural purposes (Opinion

417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

oryzivorus, Coluber, Suckow, 1798, Anfang. Theor. Angew. Naturg. Thiere 3 Amphibien: 245 (rejected in priority but not in homonymy contexts to protect Boa reticulata Schneider, 1801, now Python reticulatus (Schneider), of which oryzivorus is now a jr. synonym). Op. 1463.

oularsawa, Coluber, Bonnaterre, 1790, Tabl. Encycl. Meth. Trois Regnès Nature: 26 (rejected in priority but not in homonymy contexts, to protect Boa reticulata Schneider, 1801, now Python reticulatus (Schneider), of which oularsawa is now a jr. synonym). Op. 1463.

papillosa, Rana, Houttuyn, 1787, Anim. Mus. Houtt. Index: 19 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name is nomenclaturally non-existent, and should not be assigned to any species; in addition the name is unidentifiable).

pelamys, Hydrophis, Oken, 1816, Lehrb. Naturg. 3: 279 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

petrefactus,Crocodilus, Bertrand, 1793, Dict. Univ. Foss. Propres Foss. Accid. 1: 183 (this work by Bertrand has been suppressed for nomenclatural purposes (Opinion 592), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

philadelphicus, Axolotus, Jarocki, 1822, Zoologiia 3: 179 (rejected in priority but not in homonymy contexts to protect Salamandra tigrina Green, 1825, now Ambystoma t. tigrinum (Green), of which Jarocki's name is now a jr. synonym).

planitia, Testudo, Gmelin, 1789, in Linnaeus, Syst. Nat., ed. 13, 1: 1045 (rejected in priority but not in homonymy contexts to protect Chelonura temminckii Troost, 1835, now Macroclemys temminckii (Troost), of which planitia is now a jr. synonym).

proboscidea, Rhinostoma, Fitzinger, 1826, Neue Classif. Rept.: 56 (confirmed as a nomen nudum, hence non-existent nomenclaturally; originally intended as a name for Heterodon rhinostoma Schlegel, 1837, now Simophis rhinostoma (Schlegel)).

proboscidea, Rhinostoma (Rhinaspis), Fitzinger, 1843, Syst. Rept.: 26 (confirmed as a nomen nudum, hence non-existent nomenclaturally; originally intended as a name for Heterodon rhinostoma Schlegel, 1837, now Simophis rhinostoma (Schlegel)).

punctato-fasciata, Lacerta muralis, Eimer, 1881, Arch. Naturg. 47(1): 368, tab. 13, fig. 10 (rejected in priority but not in homonymy contexts to protect Lacerta muralis neapolitana fiumana Werner, 1891, now Podarcis melisellensis fiumana (Werner), of which Eimer's name is now a jr. synonym).

punctato-striata, Lacerta muralis, Eimer, 1881, Arch. Naturg. 47(1): 340, tab. 13, figs. 4,5 (rejected in priority but not in homonymy contexts to protect Lacerta muralis neapolitana fiumana Werner, 1891, now Podarcis melisellensis fiumana (Werner), of which Eimer's name is now a jr. synonym).

quater-radiatus, Coluber, Gmelin, 1799, Naturforscher 28: 169, tab. 3, fig. 1 (rejected in priority but not in homonymy contexts to protect Coluber scalaris Schinz, 1822, now Elaphe scalaris (Schinz), of which Gmelin's name is now a jr. synonym).

reticulata, Amphisbaena, Thunberg, 1787, D.D. Mus. Nat. Acad. Upsaliensis: 30 (rejected in priority but not in homonymy contexts to protect Amphisbaena cinerea Vandelli, 1797, now Blanus cinereus (Vandelli), of which Thunberg's name is now a jr. synonym).

salvaguardia, Stellio, Laurenti, 1768, Specimen Medicum: 57 (rejected in priority but not in homonymy contexts to protect Tupinambis bengalensis Daudin, 1802, now Varanus bengalensis (Daudin), of which Laurenti's name is now a jr. synonym).

sclerotica, Elaphe, Smith, 1941, Copeia, 1941: 135, 136 (Coluber subocularis Brown, 1901, now Bogertophis subocularis (Brown) ruled not invalidated by the sr. name Bascanion suboculare Cope, 1867, a jr. synonym of Masticophis m. mentovarius (Duméril, Bibron and Duméril, 1854), hence Smith's name is a jr. objective synonym of Brown's name).

semimembranacea, Testudo, Hermann, 1804, Observ. Zool.: 219 (rejected in priority but not in homonymy contexts to protect Trionyx (Aspidonectes) sinensis Wiegmann, 1835, now Trionyx sinensis Wiegmann, of which Hermann's name is now a jr. synonym).

sumichrasti, Henicognathus, Bocourt, 1886, Miss. Sci. Mex. (10): 628-630, pl. 41, fig. 5. (rejected in priority but not in homonymy contexts to protect Ablabes chinensis Günther, 1889, now Sibynophis chinensis (Günther), of which Bocourt's name is now a jr. synonym).

terrestris, Testudo, Fermin, 1765, Hist. Nat. Hollande Equinox.: 51 (this work by Fermin has been suppressed for nomenclatural

purposes (Opinion 660), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

tibiatrix, Hyla, Laurenti, 1768, Spec. Medicum: 34 (rejected in priority but not in homonymy contexts to protect Rana venulosa Laurenti, 1768, now Phrynohyas venulosa (Laurenti), of which H. tibiatrix is now a jr. synonym).

timorensis, Python, Müller, 1844, Verh. Natuurl. Gesch. Ned. Overz. Bez., Land- en Volkenk. (7): 211, 221 (rejected in priority but not in homonymy contexts to protect Liasis mackloti Duméril and Bibron, 1844, of which Müller's name is now a jr. synonym).

timoriensis, Python, Müller, 1857, Reizen en Onderzoekingen in den Indischen Archipel, gedaan op last der Nederlandsche Indische Regeering, tusschen de Jaren 1828 en 1836 2: 172 (ruled an incorrect subsequent spelling of Python timorensis Müller, 1844, hence without nomenclatural status).

trimeresurus, Coluber dipsas, Oken, 1816, Lehrb. Naturg. 3:263 (this work by Oken has been suppressed for nomenclatural purposes (Opinion 417), hence the name does not exist nomenclaturally, and should not be cited in the synonymy of any species).

unicolor, Cornufer, Tschudi, 1838, Class. Batr.: 28 (Tschudi's usage, and all others prior to the proposal of Eleutherodactylus unicolor Stejneger, 1904, are rejected in both priority and homonymy contexts, to preserve Stejneger's name, which would otherwise be a jr. homonym; Tschudi's name is actually referable to Eleutherodactylus and would, if not rejected, replace Leptodactylus inoptatus Barbour, 1914, now E. inoptatus (Barbour); Tschudi's name, as type of Cornufer, requires replacement in that role to leave the name Cornufer as long interpreted, through designation of Halophila vitiensis Girard, 1853, as type species, although that species is now generally referred to the genus Platymantis Günther, 1858, along with all other species formerly referred to Cornufer; if Platymantis is split in the future, Cornufer is available if needed; thus three names are protected by rejection of Tschudi's name).

ventricosa, Emys, Gray, 1855, Cat. Shield Rept. Coll. Brit. Mus., Pt. I, Testudinata (Tortoises): 28, pl. 14 (rejected in priority but not in homonymy contexts to protect Emys cataspila Günther, 1885, now Trachemys ornata cataspila (Günther), of which Gray's name is now a jr. synonym).

verrucosa, Rana, Houttuyn, 1787, Anim. Mus. Houtt. Index: 19 (this work by Houttuyn has been suppressed for nomenclatural purposes (Opinion 380), hence the name is nomenclaturally non-existent and should not be assigned to any species; in addition the name is unidentifiable).

vertebralis, Leptophis, Duméril, Bibron and Duméril, 1854, Erp. Gen. 7: 543, 544 (rejected in priority but not in homonymy contexts to protect Natrix barbouri Taylor, 1922, now Macropophis barbouri (Taylor), of which L. vertebralis is now a jr. synonym).

viridi-squamosa, Testudo, Lacépède, 1788, Hist. Nat. Quad. Ovip. Serpens 1, Syn. Meth.: 92 (rejected in priority but not in homonymy contexts to protect Thalassochelys (Colpochelys) kempii Garman, 1880, now Lepidochelys kempii (Garman), of which Lacépède's name is now a jr. synonym).

zonata, Hyla, Spix, 1824, Anim. Nov. Test. Ran. Brasil: 41 (ruled a jr. objective synonym of Rana venulosa Laurenti, 1768, [now Phrynohyas venulosa (Laurenti)], through action of the ICZN under its plenary powers).

LITERATURE CITED

Cantor, Theodore Edward. 1836. Sketch of an undescribed hooded serpent (Hamadryas hannah). Asiatick Researches, 19: 87-94.

Cantor, Theodore Edward. 1838. Notice of the Hamadryas (H. ophiophagus), a genus of hooded serpents with poisonous fangs and maxillary teeth. Proc. Zool. Soc. London, 6: 72-75.

International Commission on Zoological Nomenclature. 1956. Opinion 380. Suppression for nomenclatorial purposes under the plenary powers of the catalogue of the collection of Martinus Houttuyn prepared under the title "Animalium Musaei Houttuiniani Index" in connection with the sale of the collection in 1787. Op. Decl. Intern. Comm. Zool. Nomencl., 12(1):1-32.

ICZN. 1956. Opinion 417. Rejection for nomenclatorial purposes of volume 3 (Zoologie) of the work by Lorenz Oken entitled "Oken's Lehrbuch der Naturgeschichte" published in 1815-1816. Op. Decl. Intern. Comm. Zool. Nomencl., 14(1):1-42.

ICZN. 1961. Opinion 592. Rejection of Bertrand, 1763, Dictionnaire universel des fossiles propres et des fossiles accidentels. Bull. Zool. Nomencl., 18:114-120.

ICZN. 1963. Opinion 660. Suppression under the plenary powers of seven specific names of turtles (Reptilia, Testudines). Bull. Zool. Nomencl., 20:187-190.

ICZN. 1966. Opinion 789. Rejection of the pamphlet by J. Hübner, 1808, entitled Erste Zuträge zur Sammlung exotischer Schmetterlinge. Bull. Zool. Nomencl., 23:213-220.

ICZN. 1974. Opinion 1024. Epirhexis Cope, 1866 (Amphibia: Salientia): suppressed under the plenary powers. Bull. Zool. Nomencl., 31(3):130-132.

Melville, Richard V. and J. D. D. Smith. 1987. Official Lists and Indexes of Names and Works in Zoology. International Trust for Zoological Nomenclature. London.

Smith, Hobart M. and Rozella B. Smith. 1973. Synopsis of the Herpetofauna of Mexico. Vol. II. Lundberg; Augusta, West Virginia.

Vanzolini, Paulo E. 1977. An Annotated Bibliography of the Land and Fresh-water Reptiles of South America (1758-1975). Vol. I (1758-1900). Mus. Zool. Univ. São Paulo; São Paulo.

CROSS-INDEXES

The following cross-indexes will facilitate scanning the 200 names here treated for those pertinent to valid names. The list is divided into two groups: nomina clara (names whose allocation to known taxa is apparent) and nomina dubia (names whose allocation to any given taxon is uncertain).

NOMINA CLARA

Indented names are to be found in the preceding account. CAUTION: not all indented names are synonyms of the valid names under which they appear; most are, but in some cases the valid name is simply discussed in the account for the invalid name.

CAUDATA

A. Family-Group Names

Ambystomatidae
    Ambystomidae

B. Genus-group Names

Ambystoma
    Amblystoma
    Axolot
    Axolotus
    Philhydrus
    Phyllhydrus
    Siredon
    Sirenodon

Stegoporus
Andrias
Palaeotriton
Proteocordylus
Aneides
Anaides
Autodax
Bolitoglossa
Oedipus
Palmatotriton
Notophthalmus
Diemichylus
Diemyctelus
Diemyctylus
Notophthalma
Notophthalmia
Notopthalmus
Siren
Sirena
Sirene

C. Species-group Names

Ambystoma tigrinum tigrinum
neocaesariensis, Proteus
operculata, Siren
philadelphicus, Axolotus
Aneides lugubris
ereticauda, Triton
Cryptobranchus alleganiensis
alleghaniensis, Abranchus
Gyrinophilus porphyriticus duryi
lutescens, Triturus
Plethodon cinereus
erythronota, Salamandra
Pleurodeles waltl
funebris, Salamandra

SALIENTIA

A. Family-group Names

Leiopelmatidae
Leiopelmidae
Liopelmatina
Liopelmidae

B. Genus-group Names

Kassina
Eremiophilus
Leiopelma
Liopelma
Phrynohyas

Acrodytes
Syrrhophus
Epirhexis

C. Species-group Names

Eleutherodactylus inoptatus
unicolor, Cornufer
Eleutherodactylus unicolor
unicolor, Cornufer
Hyla boans
maxima, Rana
Phrynohyas venulosa
tibiatrix, Hyla
zonata, Hyla
Platymantis vitiensis
unicolor, Cornufer
Rana grayi
fasciata, Rana
Rana perezi
bosci, Rana

GYMNOPHIONA

A. Family-group Names

Caeciliaidae
Caeciliidae
Cecilinia

RHYNCHOCEPHALIA

A. Family-group Names

Sphenodontidae
Hatteriidae
Rhynchocephalidae

B. Genus-group Names

Sphenodon
Hatteria
Rhynchocephalus
Sphaenodon

TESTUDINES

A. Genus-group Names

Dermochelys
Coriudo
Dermatochelys
Dermochelis
Sphargis

Rhinoclemmys
    Chemelys

B. Species-group Names

Dermochelys coriacea
    mercurialis, Sphargis
Emydoidea blandingii
    flava, Testudo
    meleagris, Testudo
Kinosternon alamosae
    alamose, Kinosternon
Kinosternon oaxacae
    oaxacae, Kinosternon
Lepidochelys kempii
    minor, Testudo mydas
    viridi-squamosa, Testudo
Macroclemys temminckii
    planitia, Testudo
Rhinoclemmys punctularia
    dorsata, Testudo
Trachemys ornata cataspila
    ventricosa, Emys
Trionyx sinensis
    semimembranacea, Testudo
Trionyx steindachneri
    californiana, Aspidonectes

SAURIA

A. Family-group Names

Agamidae
    Agamoidea
    Stellionidae (2)
Teiidae
    Tupinambidae

B. Genus-group Names

Agama
    Stellio
Bachia
    Brachypus
Chalarodon
    Tritropis
    Tropidogaster
Draco
    Dracunculus
Ichnotropis
    Thermophilus
Mabuya
    Mabouia
    Mabouya

Mabuia
Mabuya
Phrynosoma
Tapaia (2)
Tapaja
Tapaya (2)
Tapayia
Uromastyx
Centrocercus

C. Species-group Names

Agama agama agama
colonorum, Agama
Agama bibronii
bibronii, Trapelus (Psammorrhoa)
Anguis fragilis colchica
besseri, Anguis
Bachia bicolor
diglossis, Chirotes
Chalarodon madagascariensis
blainvillii, Tropidogaster
Lacerta trilineata
michahellesii, Podarcis
Podarcis melisellensis fiumana
punctato-fasciata, Lacerta muralis
punctato-striata, Lacerta muralis
Varanus bengalensis
dracaena, Lacerta
salvaquardia, Stellio
Varanus (Varanus) salvator
monitor, Lacerta

AMPHISBAENIA

A. Species-group Names

Amphisbaena darwini trachura
mildei, Amphisbaena
Amphisbaena dubia
dubia, Amphisbaena
Amphisbaena fuliginosa amazonica
dubia, Amphisbaena
Blanus cinereus cinereus
reticulata, Amphisbaena

SERPENTES

A. Genus-group Names

Ahaetulla
Dryinus
Dryophis
Passerita

Anilius
    Tortrix
Bitis
    Cobra
Boa
    Constrictor
Boiga
    Ibiba
Cemophora
    Amplycephalus
Clonophis
    Cora
Dasypeltis
    Anodon
Dendrelaphis
    Tachyophis
Dromophis
    Philodendros
    Philodendrus
Enhydris
    Enhydrus
Leptophis
    Ahaetulla
    Dendrophis
Leptotyphlops
    Typhlina
Lystrophis
    Rhinostoma
Ophidioniscus
    Ophidion
Ophiophagus
    Dendraspis
    Hamadryas
Pareas
    Amplycephalus
Phimophis
    Rhinosimus
Sibon
    Asthenognathus
Simophis
    Rhinaspis
Spalerosophis
    Sphalerosophis

B. Species-group Names

Boa constrictor
    formosissimus, Constrictor
Bogertophis subocularis
    sclerotica, Elaphe
Cemophora coccinea
    doliatus, Coluber
Crotalus atrox
    cinereous, Crotalus

Crotalus horridus
    cincolor, Crotalus durissus
    concolor, Crotalus durissus
Crotalus polystictus
    multimaculata, Crotalus lugubris
Crotalus viridis decolor
    concolor, Crotalus durissus
Drymarchon corais melanurus
    melanocercus, Drymarchon corais
Drymobius margaritiferus
    chiametla, Coluber
Drymobius margaritiferus fistulosus
    chiametla, Coluber
Eirenis modesta
    nigricollis, Coluber
Elaphe scalaris
    elaphis, Coluber
    quater-radiatus, Coluber
Hemorrhois viridiflava carbonaria
    melanepis, Coluber
Heterodon platirhinos
    niger, Scytale
Liasis mackloti
    timorensis, Python
    timoriensis, Python
Lystrophis dorbignyi
    nasua, Vipera
Macropophis barbouri
    vertebralis, Leptophis
Ninia atrata
    atratus, Coluber
Philodryas nattereri
    molochina, Psammophis
Philothamnus irregularis
    caesius, Coluber
Psammophis subtaeniata
    bilineatus, Psammophis moniliger
Pseudoboa nigra
    niger, Scytale
Python reticulatus
    oryzivorus, Coluber
    oularsawa, Coluber
Sibynophis chinensis
    sumichrasti, Henicognathus
Simophis rhinostoma
    proboscidea, Rhinostoma
    proboscidea, Rhinostoma (Rhinaspis)
Storeria occipitomaculata
    leberis, Coluber
Vipera ursinii renardi
    foetidus, Coluber

CROCODYLIA
A. Species-group Names

Alligator mississippiensis
 alligator, Lacerta
 lucius, Crocodilus (Alligator)
 mississipiensis, Alligator
 mississipiensis, Crocodilus
Crocodylus palustris
 indicus, Crocodilus vulgaris

NOMINA DUBIA

A few of the invalid names listed in the preceding section are nomenclaturally non-existent, but are included there because they have commonly been included in synonymies. Thirty-seven other names, not commonly cited in synonymies, and non-existent nomenclaturally (hence not obliged to be cited), follow, with author and date.

SALIENTIA

Bufo cruciger Oken, 1816
Rana coerulea Houttuyn, 1787
Rana mitrata Houttuyn, 1787
Rana papillosa Houttuyn, 1787
Rana verrucosa Houttuyn, 1787

TESTUDINES

Testudo terrestris Fermin, 1765

SAURIA

Discosomus Oken, 1816
Petrodactylus Oken, 1816
Pterodactylus Oken, 1816
Scinci Oken, 1816
Scincorum Oken, 1816
Zygnis Oken, 1816
Anguis granulatus Houttuyn, 1787
Bipes lepidopus Oken, 1816
Draco ocellatus Oken, 1816
Lacerta areolata Houttuyn, 1787
Lacerta fasciata Houttuyn, 1787
Lacerta grisea Oken, 1816

Lacerta ocellata Oken, 1816
Scincus galliwasp Oken, 1816
Stellio graecus Oken, 1816
Stellio italicus Oken, 1816

AMPHISBAENIA

Propus Oken, 1816
Amphisbaena flavescens Houttuyn, 1787
Amphisbaena marmorata Houttuyn, 1787

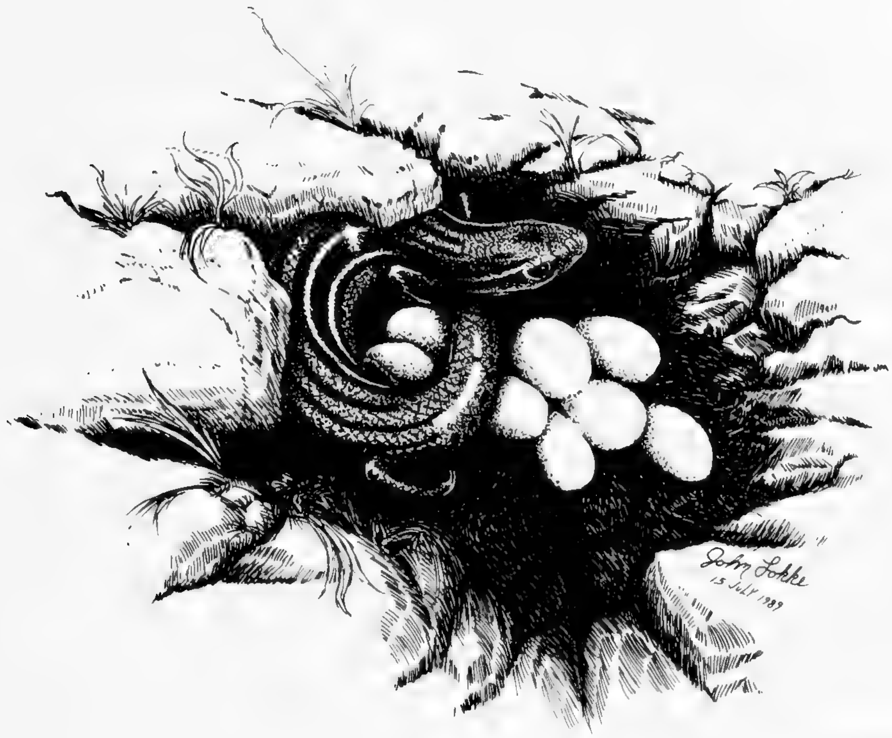
SERPENTES

Berus Oken, 1816
Draco Oken, 1816
Herpeton Oken, 1816
Berus oryzicola Oken, 1816
Coluber cupreus Houttuyn, 1787
Coluber dipsas trimeresurus Oken, 1816
Coluber jacapara Houttuyn, 1787
Crotalus durissus concolor Jan, 1859
Hydrophis pelamys Oken, 1816
Trigonocephalus lancifer Oken, 1816

CROCODYLIA

Crocodilus Bertrand, 1763
Crocodilus petrefactus Bertrand, 1763

A CATEGORIZATION AND BIBLIOGRAPHIC SURVEY OF PARENTAL BEHAVIOR IN LEPIDOSAURIAN REPTILES



LOUIS A. SOMMA

Department of Zoology
University of Florida

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 81

1990

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with the Division of Amphibians and Reptiles.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions on preparation and submission. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC 20560 USA. Please include a self-addressed mailing label with requests.

INTRODUCTION

Parental behavior is a significant aspect of the life history of a wide variety of animal taxa. Parental behavior is common to the vertebrate classes Osteichthyes (Blumer, 1979, 1982; Perrone and Zaret, 1979; Baylis, 1981; Gittleman, 1981; Gross and Sargent, 1985), Amphibia (McDiarmid, 1978; Wells, 1981; Nussbaum, 1985; Duellman and Trueb, 1986), and universal within the Aves (Kendeigh, 1952; Skutch, 1957, 1976; Welty, 1982; Silver et al., 1985) and Mammalia (Kleiman and Malcolm, 1981; Dewsbury, 1985; Kleiman, 1985; Malcolm, 1985). In contrast, relatively few reptiles exhibit parental behavior (Tinkle and Gibbons, 1977; Shine and Bull, 1979; Shine, 1985, 1988). Parental behavior is common in living crocodilians (Greer, 1970, 1971; Lang, 1987; Shine, 1988) and also may have been common in extinct archosaurs (Horner and Makela, 1979; Coombs, 1982; Horner, 1982, 1984, 1987; Horner and Gorman, 1988) and cynodonts (Graves and Duvall, 1983; Duvall, 1986). Accounts of parental behavior in four turtle species (*Gopherus agassizii*: Barrett and Humphrey, 1986; *G. flavomarginatus*: Carr, 1952; Janulaw and Appleton cited in Morafka, 1982; Appleton, 1986; Ernst and Barbour, 1989; *Manouria emys*: Louwman, 1982; McKeown et al., 1982; *Trachemys stejnegeri malonei*: Hodsdon and Pearson, 1943) are remarkable, because turtles generally lack any form of parental behavior (Shine, 1988; Ernst and Barbour, 1989). The purpose of this review is to survey the various categories of parental behavior reported for lepidosaurians (lizards, snakes, amphisbaenians and a rhychocephalian) and to provide an extensive bibliography as a guide to current and future researchers.

The phrase "parental care" refers to all nongametic and postfertilization contributions of parents to the survival of their offsprings (Wittenburger, 1981; Blumer, 1982) and is construed by some (Williams, 1966; Baylis, 1981; Keenleyside, 1981; Gross and Sargent, 1985; Congdon, 1989; Spotila and O'Connor, 1989) to include viviparity and other physiological contributions. I use the phrase "parental behavior" to limit the scope of this survey to all *behavioral* contributions by the parent to offspring survival after oviposition or parturition. Behaviors associated exclusively with oviposition and nest construction are not included in this survey; they are probably common to most oviparous lepidosaurians (Hahn, 1909; Hilzheimer, 1910; Blanchard, 1933; Carl, 1944; Carpenter, 1966; Platt, 1969; Rand and Rand, 1976; Duvall et al., 1979; Jones and Guillette, 1982; Green and Pauley, 1987).

The term "brooding" describes behaviors of the parent while attending the nest and progeny (sensu Somma, 1988; also see Pope, 1961; Peters, 1964; Carpenter and Ferguson, 1977). Thus, brooding does not include territorial, nest-site defense wherein the parent remains at a distance from the nest, and not in or on the nest or progeny, as seen in some iguanine and gekkonid lizards, and the tuatara.

HISTORICAL ASPECTS

The oldest conceivable documentation of parental behavior in a lepidosaurian is in the book of Isaiah, 34:15 (McDowell et al., 1982) written some time between 745-350 BC (Asimov, 1968). In this account, the Hebrew word "lilith," at one time interpreted as an owl (Strong, 1961; Asimov, 1968), is referred to as the "arrow snake." This vernacular name may have referred to the boid *Eryx jaculus* (Topsell, 1608; White, 1954). Since *E. jaculus* is viviparous, the snake reputed to "lay eggs and hatch, and gather them under her shadow" (McDowell et al., 1982) may refer to an oviparous snake or be erroneous, if not simply a fable.

Much of the pre-Twentieth century natural history literature indicates that many authors believed parental behavior was universal in snakes (Aristotle, [d. 322 BC]; Nicander of Colophon [135-133? BC]; Gesneri, 1551-1587; Topsell, 1608; Chateaubriand, 1827; Sundowner, 1895, 1902). The *Second Voyage of Sinbad the Seaman*, written in the 8th century AD (Burton, 1885-1888), is an example of early fiction that mentions a giant snake (undoubtedly a python) brooding its eggs. The "cockatrice" or "basilisk" was reputed to brood her eggs (Gesneri, 1551-1587; Topsell, 1608). It is likely that this mythical beast was a fantastical description of a cobra, either *Ophiophagus hannah* or a species of *Naja* (White, 1954; also see descriptions by Pliny the Elder, [d. AD 79]; Gesneri, 1551-1587; Topsell, 1608). Similarly, brooding was attributed to the "asp" (= *Naja haje*?) and the "dipsas" (= *Bungarus* sp.?; White, 1954) by Nicander. Modern documentation confirms that these taxa brood their eggs (Table VI).

Snakes have long been credited with the ability to swallow their young to protect them from danger (Topsell, 1608; Carver, 1778; Mease, 1807; Holmes, 1823; Hunter, 1824; Chateaubriand, 1827; Gosse, 1851; Rivers, 1874; Stanley, [19??]; Burroughs, 1908; Meek, 1946). Earliest accounts of this behavior are found in hieroglyphics attributed to the ancient Egyptians circa 2300 BC (Speck, 1923). So prevalent was (and still is!) this belief, that it was incorporated into early fiction, including the pre-Elizabethian poem, *The Faerie Queene* (Spenser, 1590). This alleged behavior, attributed not only to snakes but also to the lizard, *Lacerta vivipara* (Hopley, 1882), has been reviewed and discussed by numerous authors for more than 300 years (Browne, 1646; White, 1787; Hopley, 1882; Noble, 1921; Speck, 1921, 1923; Schmidt, 1929; Ditmars and Bridges, 1937; Angel, 1950; Klauber, 1972; Russell, 1983; Shine, 1988). Despite many inquiries into the plausibility of this behavior, no scientific evidence exists for its occurrence (Klauber, 1972; Shine, 1988).

Among saurians, *Scincus scincus* was reputed to care for its eggs and young (Gesneri, 1551-1587; Topsell, 1608), but no modern observations support this contention (Table V). Hoy (1883) suggested that all lizards brooded their eggs. In all likelihood, his statement is based upon observations of *Ophisaurus attenuatus* and *Eumeces septentrionalis*; these are the only egg-brooding lizards that he actually observed (Hoy, 1883). The suggestion that an amphisbaenian broods its eggs (Gesneri, 1551-1587; Topsell, 1608; Aldrovandi, 1640; reviewed in Druce, 1910), has not been verified.

CATEGORIES OF PARENTAL BEHAVIOR

The various categories of parental behavior, as reported in the literature, are listed below. The symbol in parentheses identifies the categories used in Tables I and II. The literature sources are provided in Tables V and VI.

Coil around brood (C): The attendant parent remains coiled around or covers the brood with its body, presumably creating a physical buffer or barrier between progeny and the external environment. This is the most common form of parental behavior.

Nest constructed and maintained (NC): A burrow or brood chamber is constructed by the parent and maintained while attending progeny. Although this usually involves digging a depression or burrow in the substrate, *Ophiophagus hannah* is known to maintain a relatively complex nest chamber constructed from surrounding vegetation (Wasey, 1892; Oliver,1956; Leakey, 1969; Whitaker, 1977).

Defense of brood (D): Progeny are aggressively defended by parent in the presence of conspecifics or heterospecifics.

Passive protection (PP): Neonatal vipers may accrue protection from the venomous female, without her exhibiting any overt signs of aggressive behavior (i.e., *Crotalus horridus*: W. Martin, pers. comm.).

Thermoregulation (T): Attendant parent uses its body to maintain a relatively constant incubation temperature for developing eggs. Most, perhaps all, pythonines are able to become low-grade endotherms while brooding through "shivering thermogenesis," thereby raising the temperature of the female's body and developing eggs above that of ambient conditions (Vinegar et al., 1970; Harlow and Grigg, 1984; Shine, 1988). However, it has been suggested that shivering thermogenesis is not practiced by all species of pythons (Vinegar et al., 1970; Ellis and Chappell, 1987; but see [Orlov], 1986; Shine, 1988). It is also possible that an attendant parent could (1) provide a passive thermal barrier between eggs and the external environment with its body or (2) bask in the sun and transfer radiantly absorbed heat from its body to its eggs (Medsger, 1919, 1932; Noble and Mason, 1933; Cogger and Holmes, 1960). Python eggs, of at least two species, that are not brooded, and subsequently incubated at lower temperatures, take longer to hatch and exhibit a higher rate of developmental anomalies (Vinegar, 1973, 1974; Branch and Patterson, 1975).

Hydroregulation (H): Even though is has never been demonstrated experimentally, hydroregulation has been inferred from some squamates (Fitch, 1954; Somma, 1985*b*; Bels and Van den Sande, 1986; [Orlov], 1986; York and Burghardt, 1988; Somma, 1989*b*; Somma and Fawcett, 1989). In addition, tenuous evidence suggests that two species of snakes wet their bodies with water and then lay over the eggs, thereby reducing desiccation (*Elaphe obsoleta*: J. Lombard, pers. comm.; *Trimeresurus wiroti*: Mehrtens, 1987).

False brooding (FB): Many species of pythons continue to brood when their clutches are removed prior to hatching (T. Miller, pers. comm.), and a *Python molurus* has brooded without ovipositing (J. S. Foster, pers. comm.). The nongravid female *P. m. bivittatus* housed with two gravid conspecifics brooded when the gravid females oviposited and brooded their eggs. This "false brooding" consisted of the python laying in a conical coil and exhibiting shivering thermogenesis (J. S. Foster, pers. comm.; Somma, pers. observ.).

Oophagy (OO): The parent eats eggs or aborted ova. This is a form of parental behavior because it may prevent microbial infection of viable, healthy eggs from adjacent infected eggs (Groves, 1982; Somma, 1989*a*) or prevent detection of progeny by predators using olfaction (i.e., detection of chemical cues released from rotting eggs or aborted ova) to locate food (Tinkle and Gibbons, 1977; Groves, 1982; Shine, 1988). Earliest observations of this behavior may be found in Hindu scriptures dating back to 600 BC (Rao, 1957).

Removal of nonviable eggs from nest (RE): Nonviable eggs are removed from the nest, presumably at a safe distance from viable eggs. This behavior has been reported only in *Python molurus* (Griehl, 1982) and perhaps occurs in *Gerrhonotus liocephalus* (Greene cited in Tinkle and Gibbons, 1977).

Parental care of neonates (CN): A parent remains with and expresses parental behavior toward neonates after hatching or parturition.

Neonates assisted during hatching or parturition (AN): Attending parent assists neonates from eggs, extraembryonic membranes or nest chamber. In *Eumeces obsoletus* and *E. septentrionalis*, the mother licks amniotic fluid from neonates' bodies after hatching (Evans, 1959; Somma, 1987*c*).

Manipulation or retrieval of eggs (ME): Eggs are manipulated within the nest or moved to a new nest site. Eggs that have been removed from the nest may also be retrieved.

Communal care of eggs (CC): Eggs may be deposited in a communal clutch and attended by several unrelated parents. In some situations, this behavior could be interpreted as alloparental care (Banks and Schwaner, 1984; Somma, 1987*a*).

Neonatal feeding facilitated (FN): A brooding female *E. obsoletus* avoided taking food items in deference to its young, waiting for them to finish before she fed (Evans, 1959). This behavior has not been observed in other reptiles.

Normally does not exhibit parental behavior (NPB): Parental behavior has been reported (sometimes reliably) for individuals of species that normally abandon their progeny.

Details unknown (DU): Details of parental behavior are not known or not reported.

Reliability uncertain (RU): Reliability of report regarded as uncertain or possibly unreliable due to paucity of information provided or observed by the author.

Erroneous documentation (E): Report considered unsubstantiated due to inadequate information for a species normally lacking parental behavior.

DISCUSSION

Over 6140 extant species of lepidosaurian reptiles are currently recognized (Bellairs, 1986); of these, parental behavior has been reported for 210 species. Only 148 species (82 lizards, 65 snakes, and Sphenodon) are represented by reliable documentation or approximately 2.4% of all lepidosaurians (Table III). These species represent 17 families, excluding the unsubstantiated documentation for the Hydrophiidae, Typhlopidae and the unidentified amphisbaenid family (Tables I, II, III). Parental behavior is common in Eumeces, Phelsuma, Uromastix, anguids, xantusiids, iguanines, oviparous boids, southeast-Asian elapids, oviparous viperids, Elaphe, Farancia, and Psammophylax (Tables I and II). In most species (96%) parental behavior is entirely maternal; however, paternal and biparental behavior have been confirmed (Table IV).

The literature in this survey (Tables V and VI) demonstrates a paucity of experimentally obtained data on parental behavior in lepidosaurians (but see Noble and Mason, 1933; Hutchison et al., 1966; Vinegar et al., 1970; Van Mierop and Barnard, 1976a, 1978; Hasegawa, 1985, Somma, 1985b; [Orlov], 1986; Ellis and Chappell, 1987; York and Burghardt, 1988; Graves, 1989; Somma and Fawcett, 1989; Vitt and Cooper, 1989; Guillette et al., in review). The majority of the literature is descriptive or anecdotal, and the adaptive functions of this life history trait remain largely conjectural. Furthermore, the only ecological/evolutionary analysis devoted solely to parental behavior in reptiles is provided by Shine (1988; see Lillywhite, 1988).

ACKNOWLEDGEMENTS

Obtaining the literature for this survey would have been impossible without the superlative library skills of J. Mundell, L. Valentine and the late M. Covault (Interlibrary Loan Department, University Library, University of Nebraska at Omaha), D. Beaubien, B. Gilbert and K. Harmon (Interlibrary Loan Department, Marston Science Library, University of Florida), and S. Tergas (Interlibrary Loan Department, Main Library West, University of Florida). I am also grateful those who provided or informed me of important references; they are E. J. Bredin, R. L. Burke, D. B. Carter, B. Clark, P. A. Cochran, H. Ehmann, D. Ferraro, L. A. Fitzgerald, J. S. Foster, H. W. Greene, L. J. Guillette, Jr., A. Hagedorn, T. Heaton-Jones, K. Horikoshi, T. R. Johnson, G. Kattan, J. W. Lang, J. F. Lokke, S. A. Minton, Jr., L. D. Moehn, J. C. Murphy, L. Nico, J. G. Robinson, H. M. Smith, N. M. Somma, S. F. Somma, S. Stewart and S. J. Walsh. I wish to thank all of the individuals who allowed me to cite their unpublished observations as personal communications.

I am indebted to D. Haney, A. Hensley and K. Horikoshi for translating the French, German and Japanese literature, respectively. I sincerely thank

H. B. Lillywhite for his insightful comments and criticism of the manuscript. Special thanks are extended to R. Shine for his helpful comments and opinions. I owe my sincerest gratitude to J. D. Fawcett for his assistance, use of his extensive herpetological library, comments and proofreading of the manuscript, his boundless encouragement and enthusiasm for this project. Lastly, I thank J. Matter for allowing me to use his word processor and G. Kiltie for her skillful preparation of this manuscript.

The cover illustration depicts a female *Eumeces s. septentrionalis* from Nebraska brooding eggs. I thank John F. Lokke for creating the original artwork from which the illustration was copied.

TABLE I

Distribution of parental behavior in lizards, amphisbaenians and a rhynchocephalian

Taxa	Type of parental behavior	Oviparous or viviparous	Maternal, paternal or biparental
Agamidae			
Leiolepis belliana	RU, CN	O	B?
Phrynocephalus sp.	RU, CN	O	B
Uromastix aegyptius	D	O	M
U. ornatus	D, CN	O	M
Anguidae			
Barisia imbricata	AN	V	M
Diploglossus bilobatus	C	O	M
D. delasagra	C	O	P
Elgaria coerulea	AN	V	M
E. multicarinata	C, NC, D, CC	O	M
Gerrhonotus liocephalus	C, OO?, RE?	O	M
Mesaspis moreleti	AN	V	M
Ophisaurus apodus	C, D	O	M
O. attenuatus	C, OO	O	M
O. compressus	C	O	M
O. gracilis	C	O	M
O. harti	C	O	M
O. ventralis	C, ME, OO	O	M
Cordylidae			
Cordylus cataphractus	CN	V	B
C. giganteus	CN	V	M
Gekkonidae			
Ailuronyx seychellensis	C, D, OO, AN?	O	M
Chondrodactylus angulifer	RU, D?	O	M
Eublepharis macularis	RU, D, NPB	O	M
Gekko gecko	C, D, NPB?	O	M, P
G. petricolus	C, D, OO	O	M, P
G. smithii	RU, DU	O	M

Hemidactylus turcicus	D, NPB?	O	M
Hemiphyllodactylus typus	RU, DU	O	M
Naultinus grayi	CN, D	V	B
Phelsuma borbonica	D	O	M
P. dubia	D, OO	O	M
P. flavigularis	D, OO	O	M
P. lineata	D, OO	O	M
P. madagascariensis	D, OO	O	M
P. standingi	ME	O	M
Phyllodactylus lanei	C, CC	O	M
Ptychozoon lionotum	C, D	O	M
Teratoscincus scincus	RU, NPB?	O	M
Iguanidae			
Amblyrhynchus cristatus	D	O	M
Brachylophus fasciatus	D	O	M
B. vitiensis	D	O	M
Conolophus pallidus	D	O	M
C. subcristatus	D	O	M
Crotaphytus collaris	RU, NPB	O	M
Cyclura carinata	D	O	M
C. cornuta	D	O	M
C. cychlura	D	O	M
C. nubila	D	O	M
Iguana iguana	D	O	M
Phrynosoma douglassi	RU, D, NPB	V	M
Sauromalus varius	D	O	M
Sceloporus undulatus	E, CN	O	B
Lacertidae			
Acanthodactylus scutellatus	RU, CN	O	M
Lacerta viridis	D?, ME	O	M
Scincidae			
Calyptotis scutirostrum	ME, NC	O	M
Corucia zebrata	CN, D, AN?	V	M
Cyclodina pseudornata	AN	V	M
Egernia cunninghami	AN, D	V	M
E. striata	RU, CN	V	M
E. whitii	RU, CN	V	?
Emoia cyanura	RU, CC?	O	M
Eumeces anthracinus	C, D, NC, OO	O	M
E. callicephalus	C, OO, NC, ME	O, V*	M
E. chinensis	C, NC	O	M
E. copei	CN	V	M
E. egregius	C, D, NC, CC	O	M
E. elegans	C	O	M
E. fasciatus	CN, C, D, ME, NC, OO, H?, CC	O	M
E. inexpectatus	C, OO, CC	O	M
E. laticeps	C, D, NC, ME, OO, CN,CC	O	M
E. latiscutatus	C, CN	O	M
E. lynxe	CN	V	M
E. multivirgatus	C, CN?, CC	O	M
E. obsoletus	C, ME, NC, CN, FN, D, OO	O	M

E. okadae	C, NC, OO, ME, CC	O	M
E. oshimensis	DU	O	M
E. parviauriculatus	CN	O	M
E. quadrilineatus	DU	O	M
E. schneiderii	C	O	M
E. septentrionalis	C, D, NC, H, ME, CN, CC, OO, AN	O	M
E. skiltonianus	C, D, NC, ME, CN?	O	M
E. stimsoni	RU, DU	O	M
E. tetragrammus	C	O	M
E. xanthi	C	O	M
Lampropholis mustelina	ME, NC	O	M
Leiolopisma otagense	AN	V	M
L. smithi	AN	V	M
L. zia	ME, NC	O	M
Mabuya capensis	AN	V	M
M. macrorhyncha	AN	V	M
M. macularia	RU, DU	O	M
Neoseps reynoldsi	C	O	M
Scincus scincus	E?, CN	O	M
Sphenomorphus quoyii	AN	V	M
Tiliqua rugosa	AN	V	M
Teiidae			
Tupinambis teguixin	C, D, CN?, NC, AN?	O	M
T. rufescens	NC, D?	O	M
Varanidae			
Varanus gouldii	E, AN	O	?
V. griseus	RU, DU	O	M
V. komodoensis	RU, AN, NPB?	O	M
V. mitchelli	RU, C	O	M
V. salvator	RU, D?, NPB	O	M
V. varius	AN	O	M
Xantusiidae			
Xantusia henshawi	AN	V	M
X. vigilis	AN	V	M
Trogonophidae or Amphisbaenidae (?)			
`Amphisbaina' (= unidentified species)	RU, C	O	M
Sphenodontidae			
Sphenodon punctatus	D	O	M

*One instance of viviparity in E. callicephalus has been reported by Taylor (1985).

TABLE II

Distribution of parental behavior in snakes

Taxa	Type of parental behavior	Oviparous or viviparous	Maternal, paternal or biparental
Boidae			
Aspidites melanocephalus	C, T	O	M
Boa constrictor	RU, C, D, NPB	V	M
Casarea dussemieri	RU, C	O	M
Chondropython viridis	C, T, D, H	O	M
Epicrates cenchria	AN, OO, D, CN	V	M
E. striatus	OO	V	M
E. subflavus	E, C	V*	M
Eunectes murinus	AN, OO	V	M
E. notaeus	AN, OO	V	M
Liasis albertisii	C, D, T	O	M
L. boa	C	O	M
L. childreni	C	O	M
L. fuscus	C, T, D, H	O	M
L. olivaceus	C	O	M
L. papuanus	C, T	O	M
L. perthensis	C	O	M
Morelia amethistina	C, T, CC	O	M
M. bredli	C	O	M
M. spilota	C, T, H, D, NC	O	M
Python anchietae	C, T	O	M
P. curtus	C, T	O	M
P. molurus	C, T, D, FB, RE, CN?, H?, ME	O	M
P. regius	C, T, D, H, ME	O^+	M
P. reticulatus	C, T?, D	O	M
P. sebae	C, T?, D, ME, RE	O	M
P. timoriensis	C, T	O	M
\`Lilith'or\`arrow snake' (= Eryx jaculus?)	E?, C	V	M
Colubridae			
Ahaetulla nasuta	OO	V	M
Amphiesma stolata	C	O	M
Atretium schistosum	RU, C	O	M
Cemophora coccinea	E, C, OO	O	M
Cerberus rynchops	RU, CN	V	M
Clelia clelia	C, H?	O	M
Coronella austriaca	RU, CN	V	M
Diadophis punctatus	C, NPB, CC?	O	M
Elaphe climacophora	C	O	M
E. flavolineata	C	O	M
E. guttata	RU, C, NPB	O	M
E. obsoleta	C, D, H?, NPB, CC?	O	M, B?
E. quadrivirgata	C, D	O	M
E. quatuorlineata	RU, C, NPB	O	M
E. schrenki	RU, C	O	M

Farancia abacura	C, NC, CN?	O	M
F. erytrogramma	RU, C	O	M
Heterodon platirhinos	E, C, D	O	M
Hydrodynastes gigas	RU, C	O	M
Lampropeltis triangulum	RU**, C, NPB	O	M
Lycodon aulicus	RU, C	O	M
L. striatus	RU, C	O	M
Masticophus flagellum	E, CN	O	B
Natrix natrix	C, D, NPB	O	M
Oligodon taeniolatus	RU, C	O	M
Opisthotropis latouchii	C, H?	O	M
Pituophis catenifer	E, C, D	O	M
Psammophylax rhombeatus	C, CC	O	M
P. tritaeniatus	C	O	M
P. variabilis	C	O (V)	M
Ptyas korros	RU, C	O	M
P. mucosus	C	O	M
Rhabdophis subminiata	C	O	M
Sinonatrix percarinata	C	O	M
Tropidonophis mairii	C	O	M
Xenochrophis piscator	C, NC	O	M
Elapidae			
Bungarus caeruleus	C	O	M
B. candidus	C	O	M
B. ceylonicus	C, CC?, NC, CN?	O	B?
B. fasciatus	C, CN?	O	M, B?
'Dipsas' (= Bungarus sp.?)	RU, CN?	O	M
Calliophis maculiceps	RU, D?	O	M
Demansia papuensis	RU, DU	O	M
Micrurus fulvius	RU, C, NPB	O	M
M. psyches	RU, DU	O	M
Naja melanoleuca	C	O	M, B?
N. naja	C, D, NC, OO	O	M, B
N. nigricollis	RU, DU	O	M
'Asp' (= Naja haje?)	RU, D	O	M
Ophiophagus hannah	C, NC	O	M
`Cockatrice'or`basilisk' (= Ophiophagus hannah or Naja sp.?)	RU, C	O	M
Pseudechis butleri	RU, C, D	O	M
Pseudonaja textilis	RU, C, NPB	O	M
Hydrophiidae			
Pelamis platurus	E, CN, C	V	M
Laticaudidae			
Laticauda colubrina	C, D, CN?	O	M
L. semifasciata	RU, DU	O	?
Leptotyphlopidae			
Leptotyplops dulcis	C	O	M
L. humilis	E?, C	O	M

Typhlopidae			
<u>Ramphotyphlops</u> <u>braminus</u>	RU, C, NPB	O	M
<u>Rhinotyphlops</u> <u>caecus</u>	RU, DU	O	M
Viperidae			
<u>Agkistrodon</u> <u>contortrix</u>	RU, CN, D	V	M
<u>A</u>. <u>piscivorus</u>	RU, CN, D?	V	M
<u>Calloselasma</u> <u>rhodostoma</u>	C, H, D	O	M
<u>Causus</u> <u>rhombeatus</u>	C	O	M
<u>Crotalus</u> sp.	RU, CN	V	M
<u>C</u>. <u>adamanteus</u>	E?, CN, D	V	M
<u>C</u>. <u>atrox</u>	CN, PP	V	M
<u>C</u>. <u>horridus</u>	CN, PP	V	M
<u>C</u>. <u>viridis</u>	CN, D, PP	V	M
<u>Deinagkistrodon</u> <u>acutus</u>	C	O	M
<u>Lachesis</u> <u>muta</u>	C, D	O	M
<u>Porthidium</u> <u>nummifer</u>	RU, CN	V	M
<u>Sistrurus</u> <u>catenatus</u>	RU, CN	V	M
<u>Trimeresurus</u> <u>kaulbacki</u>	DU, D?	O	M
<u>T</u>. <u>monticola</u>	C, D	O	M
<u>T</u>. <u>okinavensis</u>	C, D	O (V)	M
<u>T</u>. <u>wiroti</u>	C, H?	O	M
<u>Vipera</u> <u>aspis</u>	RU, CN, PP?	V	M
<u>V</u>. <u>berus</u>	CN, PP	V	M

*This species is viviparous (Lynn and Grant, 1940), not oviparous as reported by Gosse (1851). Perhaps Gosse confused an oviparous colubrid for <u>E</u>. <u>subflavus</u>.

**Female <u>L</u>. <u>triangulum</u> remain coiled around their eggs for a brief period after oviposition in order to compress them into an adherent mass before abandoning them (McCauley, 1945; Green and Pauley, 1987). This may account for the considerable number of references (Table VI) suggesting that this species broods its eggs.

+There is an unverified report of viviparity in <u>P</u>. <u>regius</u> (Anonymous, 1941).

TABLE III

Summary of the number of species and genera exhibiting parental behavior within lepidosaurian taxa (based on Tables I and II)

Taxa	Number* of genera	Number* of species
Squamata	107 (69)	209 (147)
Amphisbaenia	1 (0)	1 (0)
Trogonophidae or Amphisbaenidae (?)	1 (0)	1 (0)
Sauria	48 (36)	104 (82)
Agamidae	3 (1)	4 (2)
Anguidae	6 (6)	13 (13)

Cordylidae	1 (1)	2 (2)
Gekkonidae	11 (7)	18 (13)
Iguanidae	9 (6)	14 (11)
Lacertidae	2 (1)	2 (1)
Scincidae	13 (11)	41 (35)
Teiidae	1 (1)	2 (2)
Varanidae	1 (1)	6 (1)
Xantusiidae	1 (1)	2 (2)
Serpentes	58 (33)	104 (65)
Boidae	10 (7)	28 (24)
Colubridae	25 (14)	36 (20)
Elapidae	8 (3)	14 (7)
Hydrophiidae	1 (0)	1 (0)
Laticaudidae	1 (1)	2 (1)
Leptotyphlopidae	1 (1)	2 (1)
Typhlopidae	2 (0)	2 (0)
Viperidae	10 (7)	19 (12)
Rhynchocephalia	1 (1)	1 (1)
Sphenodontidae	1 (1)	1 (1)

*Number in parentheses represents actual total when erroneous and uncertain accounts are deleted from analysis (see Tables I and II).

TABLE IV

Prevalence of maternal, paternal and biparental behavior in lepidosaurians

Parent exhibiting behavior	Number* of species	Percent* of total
Maternal only	193 (142)	92.0 (96)
Paternal only	1 (1)	0.5 (0.7)
Biparental only	7 (2)	3.0 (1.3)
Maternal and biparental	4 (1)	2.0 (0.7)
Paternal or maternal	2 (2)	1.0 (1.3)
Sex of parent unknown	3 (0)	1.5 (0)

*Number in parentheses represents actual value when erroneous and uncertain sources are deleted from analysis.

TABLE V

Bibliographic sources for reports of lizard, amphisbaenians and rhynchocephalian parental behavior

Taxa	Sources
Agamidae	
Leiolepis belliana	Boulenger, 1903
Phrynocephalus sp.	Bertin and Burton, 1967
Uromastix aegyptius	Mendelssohn and Bouskila, 1989; H. Mendelssohn, pers. comm.
U. ornatus	Mendelssohn and Bouskila, 1989; G. Perry, pers. comm.; H. Mendelssohn, pers. comm.
Anguidae	
Barisia imbricata	Guillette and Hotton, 1986
Diploglossus bilobatus	Taylor, 1956
D. delasagra	Barbour and Ramsden, 1919
Elgaria coerulea	Stewart in Guillette and Hotton, 1986, and pers. comm.
E. multicarinata	Langerwerf, 1981; Jes, 1987
Gerrhonotus liocephalus	Greene and Dial, 1966; Greene in Tinkle and Gibbons, 1977
Mesaspis moreleti	Greene in Guillette and Hotton, 1986
Ophisaurus apodus	Petzold, 1971; Langerwerf, 1981, 1984; Claffey and Johnson, 1982*a*, *b*; Huff, 1985
O. attenuatus	?Hoy, 1883; Collins, 1959; Blair, 1961; Fitch, 1970, 1986, 1989; Vogt, 1981
O. compressus	Bartlett, 1985
O. gracilis	Wall, 1908; Smith, 1935; Jayaram, 1974; Daniel, 1983
O. harti	Pope, 1929, 1955
O. ventralis	Noble and Mason, 1932, 1933; Telford, 1952; Vinegar, 1968; Villiard, 1969; Mount, 1975; Somma, pers. observ.
Cordylidae	
Cordylus cataphractus	Branch, 1988; S. Jacobs, pers. comm.
C. giganteus	Patterson and Bannister, 1987; S. Jacobs, pers. comm.
Gekkonidae	
Ailuronyx sechellensis	High, [1976]; Miller, 1980; McKeown and Miller, 1985; Slavens, 1987
Chondrodactylus angulifer	Miller, 1983*a*
Eublepharis macularis	Miller, 1980
Gekko gecko	Honegger, 1969; Koch, 1972; Zaworski, 1987*a*, *c*, 1988; T. Miller, pers. comm.
G. petricolus	Zaworski, 1987*a*, *b*
G. smithii	Tho and Ho, 1979
Hemidactylus turcicus	Somma, pers. obs.
Hemiphyllodactylus typus	Eijsden, 1978
Naultinus grayi	Robb, 1980; J. Fawcett, pers. comm.

Phelsuma borbonica	Miller, 1982
P. dubia	Osadnik, 1984
P. flavigularis	Osadnik, 1984
P. lineata	Osadnik, 1984
P. madagascariensis	Osadnik, 1984; Rösler, 1988
P. standlingi	Digney and Tytle, 1983
Phyllodactylus lanei	Z. Uribe, pers. comm.; A. Ramírez, pers. comm.
Ptychozoon lionotum	Waitkus, 1983; Tytle et al., 1987
Teratoscincus scincus	Miller, 1983*b*
Iguanidae	
Amblyrhynchus cristatus	Heller, 1903; Eibl-Eibsfeldt, 1966; Trillmich, 1979; Fitch, 1982; Dellinger, 1989
Brachylophus fasciatus	Cogger, 1974; Gibbons and Watkins, 1982
B. vitiensis	Gibbons and Watkins, 1982; Gibbons, 1984/85
Conolophus pallidus	Christian and Tracy, 1982
C. subcristatus	Werner, 1982
Crotaphytus collaris	Burt and Hoyle, 1934
Cyclura carinata	Iverson, 1977, 1979
C. cornuta	Shaw, 1969; Wiewandt, 1977, 1979; Boylan, 1984
C. cychlura	Carey, 1975
C. nubila	Shaw, 1954; Crutchfield, 1982, 1986; Thompson in Blair, 1983*a*, *b*
Iguana iguana	Alvarez del Toro, 1960; Mertens, 1960; Wiewandt, 1982; Ellison, 1985
Phrynosoma douglassi	Lockwood, 1883
Sauromalus varius	Lawler and Jarchow, 1986; Lawler in Gilbert, 1987; Castillo S., 1989
Sceloporus undulatus	Hay, 1892
Lacertidae	
Acanthodactylus scutellatus	G. Perry, pers. comm.
Lacerta viridis	Mertens, 1960; Burton and Burton, 1984
Scincidae	
Calyptotis scutirostrum	Ehmann, 1988
Corucia zebrata	Hediger, 1937, 1986; Slavens, 1983; Honegger, 1985; Mehaffey, 1986; Peterson, 1986; A. Anderson, pers. comm.
Cyclodina pseudornata	J. Fawcett, pers. comm.
Egernia cunninghami	Niekisch, 1975, 1980; Zimmermann, 1986
E. striata	Pianka and Giles, 1982
E. whitii	McPhee, 1979
Emoia cyanura	J. Fitch *in* Fitch, 1970
Eumeces anthracinus	Clausen, 1938; Dowling, 1950; Hamilton, 1958; Anderson, 1965; Cooper et al., 1973; Collins, 1975
E. callicephalus	Campbell and Simmons, 1961; Zweifel, 1962; Williamson, 1986; Tanner, 1987, and pers. comm.
E. chinensis	[Wang, 1966]
E. copei	L. Guillette, pers. comm.
E. egregius	Hamilton and Pollack, 1958; Mount, 1961, 1963; Somma, pers. observ.

E. elegans	Mell, 1929; Hikida, 1981
*E. fasciatus**	Ditmars, 1904, 1907; Allard, 1909; Ruthven, 1911; Dunn, 1920; Blanchard, 1922; Bishop, 1926; Burt, 1928, 1937; Corrington, 1929; Klots, 1930; Noble and Mason, 1932, 1933; Burt and Burt, 1935, Taylor, 1935; Conant, 1938, 1951; McCauley, 1939, 1945; Cagle, 1940; Anderson, 1942, 1965; McClellan et al., 1943; Minton, 1944, 1972; H. Smith, 1946; Neill, 1948; Evans and Roeker, 1951; Fitch, 1954, 1967; Parmalee, 1955; Kennedy, 1956; Reynolds, 1959; Tinkle, 1959, P. Smith, 1961; Leviton, [1972]; Snyder, 1972; Burghardt, 1973; Mount, 1975; Fitch and von Achen, 1977; Vogt, 1981; Groves, 1982; Lang, 1982, 1983; Cooper et al., 1983; Cooper and Vitt, 1985; Stewart and Duvall, 1985; Vitt and Cooper, 1986, 1989; Green and Pauley, 1987; Johnson, 1987; Cochran, 1989; Somma, pers. observ.
E. inexpectatus	Smith, 1946; Duellman and Schwartz, 1958; Hamilton, 1958; Molchos, 1971; ?Loop and Scoville, 1972; Mount, 1975; Vitt and Cooper, 1986; Dundee and Rossman, 1989; Somma, pers. observ.
E. laticeps	Hurter, 1911; Noble and Mason, 1932, 1933; Taylor, 1935; Cook, 1943; McClellan et al., 1943; Mansueti, 1948; Martof, 1956; Smith, 1961; Mount, 1975; Johnson, 1979; Moehn, 1980; Schuette, 1980; Ashton and Ashton, 1985; Cooper and Vitt, 1985; Hammond, 1985; Vitt and Cooper, 1985*a*, *b*, 1989; Green and Pauley, 1987; Johnson, 1987; Meshaka et al., 1988; Somma, pers. observ.
E. latiscutatus	Sengoku, 1979; Hikida, 1981; [Mathui, 1985]
E. lynxe	L. Guillette, pers. comm.
E. multivirgatus	Gehlbach, 1965; Van Devender and Van Devender, 1975; A. Aquino, pers. comm.; J. Lynch, pers. comm.
E. obsoletus	Taylor, 1935; Smith, 1946; Fitch, 1955, 1956, 1964, 1967, 1970; Fouquette and Lindsay, 1955; Evans, 1959; Hall, 1972; Hall and Fitch, 1972; J. Lynch, pers. comm.; Somma, pers. observ.
E. okadae	[Hikida, 1975]; Sengoku, 1979; Hasegawa, 1984, 1985, and pers. comm.; [Mathui, 1985]
E. oshimensis	Toyama, 1975
E. parviauriculatus	Tanner, 1987, and pers. comm.
E. quadrilineatus	Mell, 1929
E. schneiderii	Zimmermann, 1986
E. septentrionalis	?Hoy, 1883; Breckenridge, 1941, 1943, 1944; Smith and Slater, 1949; Nelson, 1963; Bredin, 1981, 1989 [pers. comm.]; Lang, 1982, 1983; [Gerholdt], 1984*b*; Somma, 1985*a*, *b*, *c*, 1987*a*, *b*, *c*, 1989*a*; Somma and Fawcett, 1985, 1989; McAllister, 1987; (reviewed in Somma and Cochran, 1989)

E. skiltonianus	Heller in McClain, 1899**; Van Denburgh, 1922; Woodbury, 1931; Tanner, 1943, 1957
E. stimsoni	Taylor, 1935
E. tetragrammus	Strecker, 1908; Werler, 1951; Behler and King, 1979
E. xanthi	Pope in Schmidt, 1927; Mell, 1929
Lampropholis mustelina	Ehmann, 1988
Leiolopisma otagense	Smithells in Sharrell, 1966
L. smithii	J. Fawcett, pers. comm.
L. zia	Ehmann, 1988
Mabuya capensis	Rose, 1929, 1950; FitzSimons, 1943
M. macrorhyncha	Rebouças-Spieker and Vanzolini, 1978
M. macularia	Daniel, 1983
Neoseps reynoldsi	Telford, 1959
Sphenomorphus quoyii	Shine, 1988
Scincus scincus	Gesneri, 1551-1587; Topsell, 1608
Tiliqua rugosa	Mertens, 1960; Hitz, 1983
Teiidae	
Tupinambis teguixin	Reese, 1922; Krieg, 1925; Fitzgerald et al., 1989, In press
T. rufescens	Fitzgerald et al., 1989, In press
Varanidae	
Varanus gouldii	Berney, 1936
V. griseus	Auffenberg, 1981
V. komodoensis	Lallemant, 1929; Pfeffer, 1959; Auffenberg, 1981
V. mitchelli	Gow in Shine, 1988
V. salvator	Biswas and Kar, 1981
V. varius	Cogger, 1967, and in Shine, 1988; Mertens, 1987; Carter, 1989, and pers. comm.
Xantusiidae	
Xantusia henshawi	Shaw, 1949
X. vigilis	Cowles, 1944; Miller, 1954
Trogonophidae or Amphisbaenidae (?)	
`Amphisbaina' (= species?)	Gesneri, 1551-1587; Topsell, 1608; Aldrovandi, 1640
Sphenodontidae	
Sphenodon punctatus	Thompson, 1988, and in Shine, 1988 and Heaton-Jones, 1989; Guillette et al., in review

*Prior to 1932, Eumeces inexpectatus and E. laticeps were included within the species E. fasciatus (Cope, 1900; Davis, 1968; Steiner, 1986). The fasciatus group was divided into three species by Taylor (1932a, b, 1935); E. fasciatus, E. inexpectatus and E. laticeps. Consequently, some references pertaining to E. fasciatus prior to 1932 may actually refer to either, E. inexpectatus or E. laticeps.

**Identity of species as described in this account is uncertain. This could refer to Eumeces gilberti; if so, it is the only record of brooding in this species.

TABLE VI

Bibliographic sources for reports of snake parental behavior

Taxa	Sources
Boidae	
Aspidites melanocephalus	Ross, 1978; Boos, 1979; Murphy et al., 1981; Barker, 1982, 1985; Charles et al., 1985
Boa constrictor	Lanworn, 1972; Wells, 1981
Casarea dussumieri	Bloxam, 1984
Chondropython viridis	Kibler in Lederer, 1944; Pope, 1961; Kratzer, 1962; MacKay, 1973; Switak, 1975; Walsh, 1977, [1980]; Ross 1978; Olexa, 1979; Christian, 1981; Engelmann and Obst, 1981; Slavens, 1982, 1983, 1984, 1985, 1987; Hudson, 1983; Van Mierop et al., 1983; Zulich, 1983, 1985; [Orlov], 1986; Wexo, 1987
Epicrates cenchria	Boos, 1976; Brunner, 1979; Groves, 1981; Walsh and Davis, 1984
E. striatus	Huff, 1980; Slavens, 1987
E. subflavus	Gosse, 1851
Eunectes murinus	Neill and Allen, 1962; Holmstrom and Behler, 1981
E. notaeus	Holmstrom, 1981; Slavens, 1985, 1988; Townson, 1985
Liasis albertisii	Kinghorn, 1956; Johnson, 1975; Ross and Larman, 1977; Ross, 1978; Tarbet, 1984; Slavens, 1986; B. Clark, pers. comm.
L. boa	Barker, 1982; Mehrtens, 1987
L. childreni	Ross, 1973, 1980a, 1983; Dunn, 1979a; Sheargold, 1979; Barker, 1982; Slavens, 1988
L. fuscus	Kinghorn, 1956; Gow, 1976; Ross and Larman, 1977; Ross, 1978, 1980b; Boos, 1979, 1983; McPhee, 1979; Barker, 1982; Weidner in Funk, 1982; Orlow, 1982; Bulian and Broer, 1984; Charles et al., 1985; [Orlov], 1986; Mehrtens, 1987; Shine, 1988
L. olivaceus	Kinghorn, 1956
L. papuanus	Tryon, 1985; Tryon and Whitehead, 1988
L. perthensis	Stafford, 1986
Morelia amethistina	Pope, 1961; Ross, 1978; Boos, 1979; McPhee, 1979; Parker, [1982]; Banks and Schwaner, 1984; Charles et al., 1985; Grow, 1987; B. Clark, pers. comm.

M. bredli	Gow, 1981, 1983
M. spilota	Allan in G. Krefft, 1869; P. Krefft, 1926; Fleay, 1956; Cogger and Holmes, 1960; Gow, 1976, 1983; Ross, 1978; Worrel in Boos, 1979; McPhee, 1979; Harlow in Shine, 1980; Weidner in Funk, 1982; Broer, 1983; Burton and Burton, 1984; Harlow and Grigg, 1984; Charles et al., 1985; Bels and Van den Sande, 1986; Slip, 1986; Lombard, 1987; Slip and Shine, 1988a, b; Anonymous, [19??]
Python anchietae	McLain, 1983; Laszlo, 1984; Branch, 1988
P. curtus	Noble, 1935; Stemmler, 1969; Vinegar et al., 1970; Reitinger and Lee, 1978; Katuska, 1983; Stafford, 1986; Trutnau, 1986; T. Weidner, pers. comm.
P. molurus	Bennett, 1824; Lamarrepiquot [=Lamarre-Piquot], 1835a; Valenciennes, 1841a, b; Duméril, 1842; Lamarre-Piquot, 1835b, 1842, 1858a, b; Forbes, 1881; Holland in Hopley, 1882; Marshall, 1893; Pinkert, 1893; Kern, 1907; Wall, 1912, 1921; Abercromby, 1913; Doflein, 1914; Krogh, 1916; Leigh, 1926, 1936; Lederer, 1928, 1944, 1956; Schlott, 1935; Kopstein, 1938; Patsch, 1943; Smith, 1943; Walker and Stoddart in Angel, 1950; Deraniyagala 1955; Stemmler-Morath, 1956; Vogel, [1958?]; Anonymous, 1960a, Dowling, 1960; Lutz, 1962; Deoras, 1965; Wendt, 1965; Hutchison et al., 1966; Yadav, 1967; Vinegar et al., 1970; Wagner, 1973, 1976; Coborn, 1975, 1985; Foekema, 1975; Acharjyo and Misra, 1976; Van Mierop and Barnard, 1976a,b, 1978; Frank, 1977; Acharjyo, 1978; Getreuer, 1979; Townson, 1980, [1989]; Frye, 1981; Griehl, 1982; Clark and Tytle, 1983; Gurung, 1983; Van Mierop et al., 1983; [Gerholdt], 1984a, Conners, 1985; Slavens, 1985, 1987, 1988; Alderton, 1986; Michaels, 1986; Trutnau, 1986; Whitaker and Whitaker, 1986; Clark, 1988; Obst et al., 1988; Schleich and Kästle, 1988; Cox, 1989
P. regius	Pitman, 1938; Schivre, 1972; Logan, 1973; Peters, 1976; Boos, 1979; Van Mierop and Bessette, 1981; Malone, 1982; Orlow, 1982; Lehmann and Lehmann, 1983; Laszlo, 1984; Barten, 1986; [Orlov], 1986; Trutnau, 1986; Ellis and Chappell, 1987; Slavens, 1987; Kirschner and Ochsenbein, 1988
P. reticulatus	Abbott in Wray, 1862; Köhler, 1907; Ditmars, 1910; Hilzheimer, 1910;

	Benedict, 1932; Kopstein, 1938; Lederer, 1944, 1956; Taylor, 1965; Honegger, 1970, 1970/71, 1975; Müller, 1970; Vinegar et al., 1970; Foekema, 1971; La Panouse and Pellier, 1973; Johnson, 1977; Trutnau, 1980, 1986; Slavens, 1984
P. sebae	Günther, 1862; Sclater, 1862; [Günther], 1886; F. FitzSimons, [1912], 1930; Werner, 1930 (in Angel, 1950); Benedict and Mann in Ditmars, 1931; Benedict, 1932; Benedict et al., 1932; Pitman, 1938; Lederer, 1942, 1944, 1956; Broadley, 1959; Anonymous, 1960a,b; Dowling, 1960, 1961; Sweeney, 1961; V. FitzSimons, 1962, 1970; Meyer-Holzapfel, 1969; Schütte, 1970; Vinegar et al., 1970; Munnig Schmidt, 1971, 1973; Patterson, 1974; Branch and Patterson, 1975; Broadley and Cock, 1975a, b; Pienaur et al., 1978; Dunn, 1979b; Slavens, 1985; Trutnau, 1986; Patterson and Bannister, 1987; Branch, 1988; Schleich and Kästle, 1988; Shine, 1988
P. timoriensis	Murphy et al., 1978; Barker, 1982
`Lilith' or `arrow snake' (= Eryx jaculus?)	Isaiah 34:15, [c. 745-350 BC], (McDowell et al., 1982)
Colubridae	
Ahaetulla nasuta	Rieppel, 1970
Amphiesma stolata	Wall, 1911, 1921; Mell, 1929; Daniel, 1983
Atretium schistosum	Murthy, 1986
Cemophora coccinea	Ditmars, 1907
Cerberus rynchops	Whitaker, 1978; Trutnau, 1986
Clelia clelia	Brazil, 1914, and in Roosevelt, 1914
Coronella austriaca	Appleby, 1971
Diadophis punctatus	?McCauley, 1945; Cook, 1954; Fowlie, 1965; ?Brodie et al., 1969; Somma, pers. observ.
Elaphe climacophora	Fukada, 1965
E. flavolineata	Kopstein, 1938
E. guttata	Kelly et al., 1936; Haast and Anderson, 1981; Kent in Shine, 1988; T. Miller, pers. comm.
E. obsoleta	Ditmars, 1907; Medsger, 1919, 1932; ?Netting, 1927; ?McCauley, 1945; Pope, 1946; M. Fisher, pers. comm.; J. Lombard, pers. comm.
E. quadrivirgata	Fukada, 1965; Orlow, 1982
E. quatuorlineata	Vogel, [1958?]
E. schrenki	Kudryavtsev and Frolov, 1984
Farancia abacura	Ridgeway, 1883 (in Hay, 1892; Wright and Wright, 1957; Minton, 1972); Meade, 1937, 1940, 1945, 1946; Conant and Downs, 1940;

	Goldstein, 1941; Cagle, 1942; Reynolds and Solberg, 1942; Cook, 1954; Riemer, 1957; Tinkle, 1959; Hahn and Wilson, 1966; Crawford, 1984; Mehrtens, 1987; Dundee and Rossman, 1989
Farancia erytrogramma	Fry in Wright and Wright, 1957; Neill, 1964*a*; Ashton and Ashton, 1981
Heterodon platirhinos	Hay, 1892, 1893; Hahn 1909
Hydrodynastes gigas	Vogel 1964
Lampropeltis triangulum	Ditmars, 1907; Noble, 1920; Babcock, 1929; Anonymous, 1940; Minton, 1972; Minton and Minton, 1973; Marsec in Shine, 1988
Lycodon aulicus	Herklots, 1935
L. striatus	Wall, 1921
Masticophus flagellum	Meek, 1946
Natrix natrix	Stradling in Hopley, 1882; Gallwey, 1932; Berridge, 1935; Smith, 1951; Parker, 1963; Appleby, 1971
Oligodon taeniolatus	Daniel, 1983
Opisthotropis latouchii	Pope, 1929
Pituophis catenifer	Carl, 1944
Psammophylax rhombeatus	F. FitzSimons, [1912]; V. FitzSimons, 1962, 1970; Le Roux, 1964; Bourquin, 1970; Visser, 1971; De Waal, 1978; Branch, 1981, 1988; Broadley, 1983; Jacobsen, 1985; Trutnau, 1986; Patterson and Bannister, 1987
P. tritaeniatus	Sweeney, 1961; Isemonger, 1968; Branch, 1981; Hedges, 1983; Patterson and Bannister, 1987
P. variabilis	Spawls in Broadley, 1977
Ptyas korros	Mell, 1929
P. mucosus	Wall, 1907, 1921; Mell, 1929; Kopstein, 1938; Daniel, 1983
Rhabdophis subminiata	Mell, 1929
Sinonatrix percarinata	Pope, 1929, 1935
Tropidonophis mairii	?Sundowner, 1895*, 1902; Bredl in Shine, 1988
Xenochrophis piscator	Abercromby, 1913; Mell, 1929; Whitaker, 1978; Daniel, 1983; Whitaker and Whitaker, 1986
Elapidae	
Bungarus caeruleus	Wall, 1921; Daniel, 1983; Whitaker and Whitaker, 1986
B. candidus	Mell, 1929; Shaw and Shebbeare, 1931; Soderberg, 1973
B. ceylonicus	Green, 1905
B. fasciatus	Evans, 1905; Wall, 1921; Mell, 1929; Soderberg, 1973; Yahya, 1985
'Dipsas' (= *Bungarus* sp.?)	Nicander of Colophon [135-133? BC]
Calliophis maculiceps	Frith, 1977 (also illustrated in Phelps, 1981)
Demansia papuensis	Parker, [1982]

<u>Micrurus</u> <u>fulvius</u>	Campbell, 1973
<u>M</u>. <u>pysches</u>	Mole, 1924
<u>Naja</u> <u>melanoleuca</u>	Tryon, 1979; Dowling, 1986
<u>N</u>. <u>naja</u>	[Appuhamy, 1810] (see Deraniyagala, 1955); Fayrer, 1870; Kipling, 1894+; Wall, 1921; Mell, 1929; Jennison, 1931; Kopstein, 1938; Smith, 1943; Simmon, 1944; Tweedie, 1954; Deraniyagala, 1955; Rao, 1957; Ducket, 1964; Deoras, 1965; Petzold, 1968; Miller, 1970; Campbell and Quinn, 1975, Daniel, 1983; Whitaker and Whitaker, 1986
'Asp' (= <u>Naja</u> <u>haje</u>?)	Nicander of Colophon [135-133? BC]
<u>N</u>. <u>nigricollis</u>	Håkansson, 1981
<u>Ophiophagus</u> <u>hannah</u>	Fayrer, 1870; Nicholson, 1870; Wasey, 1892; Evans, 1903; Joynson, 1917; Wall, 1924; Berridge, 1935; Mustill, 1936; Smith, 1936; Oliver, 1956; Leakey, 1969; Ionides and Leakey in Soderberg, 1973; Burchfield, 1977; Whitaker, 1977, 1978; Reitinger and Lee, 1978; Daniel, 1983; Gurung, 1983; Whitaker and Whitaker, 1986; Dattatri, 1987; Mehrtens, 1987; Shine, 1988
`Cockatrice'or 'Basilisk' (= <u>Ophiophagus</u> <u>hannah</u> or <u>Naja</u> sp.?)	Gesneri, 1551-1587; Topsell, 1608
<u>Pseudechis</u> <u>butleri</u>	Fitzgerald and Mengden, 1987
<u>Pseudonaja</u> <u>textilis</u>	Fleay, 1943; Edwards and Wells in Shine, 1988; Shine, 1989
Hydrophiidae	
<u>Pelamis</u> <u>platurus</u>	Bertin and Burton, 1967
Laticaudidae	
<u>Laticauda</u> <u>colubrina</u>	Semper, 1881; ?Sundowner, 1895, 1902*; Smedley, 1931; Neill, 1964<u>b</u>, Taylor, 1965
<u>L</u>. <u>semifasciata</u>	Herre and Rabor, 1949
Leptotyphlopidae	
<u>Leptotyphlops</u> <u>dulcis</u>	Hibbard, 1964
<u>L</u>. <u>humilis</u>	Whitfield, 1983++
Typhlopidae	
<u>Ramphotyphlops</u> <u>braminus</u>	Mell, 1929
<u>Rhinotyphlops</u> <u>caecus</u>	Bogert, 1940
Viperidae	
<u>Agkistrodon</u> <u>contortrix</u>	Anderson, 1942; Fitch, 1960; Kennedy, 1964
<u>A</u>. <u>piscivorus</u>	Wharton, 1960, 1966
<u>Calloselasma</u> <u>rhodostoma</u>	Smith, 1915, 1943; Tweedie, 1954; Leakey, 1969; Campden-Main, 1970; Reitinger and Lee, 1978; Liat, 1982; York and Burghardt, 1988; Gloyd and Conant, 1989

Causus rhombeatus	F. FitzSimons, [1912]; Woodward, 1933; Sweeney, 1961; Broadley, 1983
Crotalus sp.	Audubon, 1909
C. adamanteus	Meek, 1946
C. atrox	Price, 1988
C. horridus	Anderson, 1942, 1965; Lokke, 1985; Martin, 1986a,b, 1989, and pers. comm.; ?Bartlett, 1987; ?Brown, 1987; ?Reinert and Zappalorti, 1988
C. viridis	Gloyd, 1937; Jackley and Shelton in Klauber, 1972; Duvall et al., 1985; Graves, 1988, 1989
Deinagkistrodon acutus	Fleck, 1987
Lachesis muta	Mole, 1924, and in Ditmars, 1910; Donisthorpe, 1947; Ramsey and Travis, 1960; Wehekind, 1960; Emsley, 1977; Caycedo, 1978; Frieberg, 1982
Porthidium nummifer	Picado T., 1931
Sistrurus catenatus	Greene and Oliver, 1965; ?Vogt, 1981; Reinert and Kodrich, 1982
Trimeresurus kaulbacki	Obst et al., 1988
T. monticola	Leigh, 1910; Pope, 1929, 1935
T. okinavensis	?Fukada, 1964; Koba et al., 1970
T. wiroti	Mehrtens, 1987
Vipera aspis	Lanworn, 1972; Naulleau, 1987; Dowling, 1986
V. berus	Brittain, 1866 (in Hopley, 1882); Service, 1902; Smith, 1951; Appleby, 1971; Street, 1979; Naulleau, 1987

*It is not known what species Sundowner actually observed but T. mairii and L. colubrina seem likely candidates. The credibility of Sundowner's [= Tichborne, H. (sic?)] (1895, 1902) observations are at best questionable, and mostly fabricated (Johnson and Smith, 1985). Nevertheless, it is likely that he also observed Australian pythons (species unspecified) brooding their eggs (Sundowner, 1895, 1902).

+Although a work of fiction, Kipling (1894) was one of the earliest published accounts of brooding in Naja naja (mistakenly referred to as Ophiophagus hannah) in English. He based his story, "Rikki-tikki-tavi," on a personal communication from an anonymous herpetologist (Kipling, 1894).

++Whitfield's (1983) mention of brooding in L. humilis is likely a mistaken reference to Hibbard's (1964) observations on L. dulcis.

REFERENCES

Abercromby, A. F. 1913. Some notes on the breeding habits of some Ceylon snakes and reptiles. Spolia Zeylanica 9: 144-147.

Acharjyo, L. N. 1978. An incubating python. Hornbill 1978 (October-December): 36-37.

Acharjyo, L. N., and R. Misra. 1976. Aspects of reproduction and growth of the Indian python, Python molurus molurus, in captivity. Brit. J. Herp. 5:562-565.

Alderton, D. 1986. A Petkeeper's Guide to Reptiles & Amphibians. Salamander Books; London.

Aldrovandi, U. 1640. Serpentum et Draconū Historiae. Nicolai Tebaldini; Bonaniae.

Allard, H. A. 1909. Notes on some salamanders and lizards of north Georgia. Science 30: 122-124.

Alvarez del Toro, M. 1960. Los Reptiles de Chiapas. Instituto Zoológico del Estado; Tuxtla Gutiérrez, México.

Anderson, P. 1942. Amphibians and reptiles of Jackson County, Missouri. Bull. Chicago Acad. Sci. 6: 203-220.

Anderson, P. 1965. The Reptiles of Missouri. University of Missouri; Columbia.

Angel, F. 1950. Vie et Moeurs des Serpents. Payot; Paris.

Anonymous. 1940. Snakes. Pp. 338-389. In R. De Sola (ed), American Wild Life, Illustrated. Wise & Company; New York.

Anonymous. 1941. Ball python upsets zoological ideas. Sci. News Lett. 39: 265.

Anonymous. 1960a. ["This snake is not wired for sound"]. Anim. King. 63: [113] [photo].

Anonymous. 1960b. [Excellent success has been achieved...]. Anim. King. 63: 146 [photo].

Anonymous. [19??]. Bush Dwellers of Australia. Australian News and Information Bureau; [Canberra].

Appleby, L.G. 1971. British Snakes. John Baker (Publishers); London.

Appleton, A.B. (1986). Captive management and breeding of the Bolson tortoise (Gopherus flavomarginatus). [9]: 101-119. In S. McKeown, F. Caporaso, and K. H. Peterson (eds), 9th International Herpetological Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

[Appuhamy, A.V.L.L. 1810. The Sarapaduteya Nototh Sarapothpaththiya, a Palmadulla Snake Bite Treatise.] [unpublished Sinhala serpent lore extracted from ancient palm leaf manuscripts (see Deraniyagala, 1955)].

Aristotle. [d. 322 BC]. [History of Animals]. Translated in Cresswell, R. (1907). Aristotle's History of Animals. George Bell & Sons; London.

Ashton, R.E., Jr., and P. S. Ashton. 1981. Handbook of Reptiles and Amphibians of Florida. Part One. The Snakes. Windward Publishing; Miami.

Ashton, R.E., Jr., and P. S. Ashton. 1985. Handbook of Reptiles and Amphibians of Florida. Part Two. Lizards, Turtles & crocodilians. Windward Publishing; Miami.

Asimov, I. 1968. Asimov's Guide to the Bible. Vol. One. The Old Testament. Doubleday & Company; Garden City.

Audubon, J. W. 1909. Audubon's Western Journal: 1849-1850. Arthur H. Clark Company; Cleveland.

Auffenberg, W. 1981. The Behavioral Ecology of the Komodo Monitor. University Presses of Florida; Gainesville.

Babcock, H.L. 1929. The Snakes of New England. Boston Society of Natural History; Boston.

Banks, C., and T. D. Schwaner. 1984. Two cases of interspecific hybridization among captive Australian boid snakes. Zoo Biol. 3: 221-227.

Barbour, T., and C. T. Ramsden. 1919. The herpetology of Cuba. Mem. Mus. Comp. Zool. Harvard 47: 69-213.

Barker, D.G. 1982. Maintenance and reproduction of pythons at the Dallas Zoo. [5]: 86-92. In R. A. Hahn (ed), 5th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Barker, D. G. 1985. Maintenance and reproduction of black-headed pythons at the Dallas Zoo. [8]:106-108. In S. McKeown and F. Caporaso (eds), 8th Annual International Herpetological Symposium on Captive Propagation & Husbandry. Zoological Consortium; Thurmont, Maryland.

Barrett, S. L., and J. A. Humphrey. 1986. Agonistic interactions between Gopherus agassizii (Testudinidae) and Heloderma suspectum (Helodermatidae). Southwest. Nat. 31: 261-263.

Barten, S.L. 1986. Egg retention in captive snakes. Bull. Chicago Herpetol. Soc. 21: 65-71.

Bartlett, R.D. 1985. Notes on the natural history and reproductive strategy of the island glass lizard, Ophisaurus compressus. Brit. Herpetol. Soc. Bull. (11): 19-21.

Bartlett, R.D. 1987. In Search of Reptiles and Amphibians. E.J. Brill; Leiden/New York/K benhavn/Köln.

Baylis, J.R. 1981. The evolution of parental care in fishes, with reference to Darwin's rule of male sexual selection. Envir. Biol. Fishes 6: 223-251.

Behler, J.L., and F.W. King 1979. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A. Knopf; New York.

Bellairs, A.d'A. 1986. Reptiles. Pp. 60-67. In T.R. Halliday and K. Adler (eds), The Encyclopedia of Reptiles and Amphibians. Facts on File Publications; New York.

Bels, V.L., and P.A. Van den Sande. 1986. Breeding the Australian carpet python Morelia spilotes variegata at Antwerp Zoo. Int. Zoo Yearb. 24/25: 231-238.

Benedict, F.G. 1932. The physiology of large reptiles with special reference to the heat production of snakes, tortoises, lizards and alligators. Carnegie Inst. Washington Publ. (425): 1-539.

Benedict, F.G., E.L. Fox, and V. Coropatchinsky. 1932. The incubating python: a temperature study. Proc. Natl. Acad. Sci. 18: 209-212.

Bennet, E.T. 1829. The Tower Menagerie. Robert Jennings; London.

Berney, F.L. 1936. Gould's monitor (Varanus gouldiae). Queensland Nat. 1936: 12-14.

Berridge, W.S. 1935. All about Reptiles and Batrachians. George G. Harrap & Company; London.

Bertin, L., and M. Burton. 1967. Reptiles (Class Reptilia). Pp. 283-330. In C.R. Murphy (ed), The Larousse Encyclopedia of Animal Life. Paul Hamlyn; London.

Bishop, S.C. 1926. Records of some amphibians and reptiles from Kentucky. Copeia (152): 118-120.

Biswas, S., and S. Kar. 1981. Some observations on nesting habits and biology of Varanus salvator (Laurenti) of Bhitarkanika Sanctuary, Orissa. J. Bombay Nat. Hist. Soc. 78: 303-308.

Blair, A.P. 1961. Notes on Ophisaurus attennatus attennatus (Anguidae). Southwest. Nat. 6: 201.

Blair, D.[W.] 1983a. Dragons of Cayman. Oceans 16(2):31-33.

Blair, D.W. 1983b. The Cayman Island rock iguana Cyclura nubila caymanensis. San Diego Herpetol. Soc. Newsl. 5(9): 1-2.

Blanchard, F.N. 1922. The amphibians and reptiles of western Tennessee. Occ. Pap. Mus. Zool. Univ. Michigan (117): 1-18.

Blanchard, F.N. 1933. Eggs and young of the smooth green snake, Liopeltis vernalis (Harlan). Pap. Mich. Acad. Sci. Arts Lett. 17: 493-508.

Bloxam, Q. 1984. A preliminary report on the captive managment and reproduction of the Round Island boa (Casarea dussumieri). [7]:115-117. In P.J. Tolson (ed), 7th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Blumer, L.S. 1979. Male parental care in the bony fishes. Quart. Rev. Biol. 54: 149-161.

Blumer, L.S. 1982. A bibliography and categorization of bony fishes exhibiting parental care. Zool. J. Linn. Soc. 75: 1-22.

Bogert, C.M. 1940. Herpetological results of the Vernay Angola expedition with notes on African reptiles in other collections. Part I. Snakes, including an arrangement of the African Colubridae. Bull. Amer. Mus. Nat. Hist. 77: 1-107.

Boos, H.[E.A.] 1976. Behavioral information needed. AAZPA Newsl. 17: 13.

Boos, H.E.A. 1979. Some breeding records of Australian pythons Pythonidae. Int. Zoo Yearb. 19: 87-89.

Boos, H.E.A. 1983. Australo-Asian pythons with some breeding records in captivity. ASRA J. 2(1): 22-32.

Boulenger, G.A. 1903. Report on the batrachians and reptiles. Fasc. Malayensis, Zool., Anthro. Zool. Res. Exp. Perak Siam Malay States, 1901-1902 (1): 131-176.

Bourquin, O. 1970. A note on the growth of spotted skaapsteker embryos (Psammophylax rhombeatus). J. Herpetol. Assoc. Africa (6): 8-9.

Boylan, T. 1984. Breeding the rhinoceros iguana Cyclura c. cornuta at Sydney Zoo. Int. Zoo Yearb. 23: 144-148.

Branch, B. [= W.R.]. 1988. Field Guide to the Snakes and Other Reptiles of Southern Africa. Ralph Curtis-Books-Publishing; Sanibel Island, Florida.

Branch, W.R. 1981. Venomous snakes of southern Africa. 3. Concluding part: Colubridae. Bull. Maryland Herpetol. Soc. 17: 125-150.

Branch, W.R., and R.W. Patterson. 1975. Notes on the development of embryos of the African rock python, Python sebae (Serpentes: Boidae). J. Herp. 9: 243-248.

Brazil, V. 1914. La Défense Contre l'Ophidisme. Pocai-Weiss & C.; Saint-Paul.

Breckenridge, W.J. 1941. Amphibians and reptiles of Minnesota with special reference to the black-banded skink, Eumeces septentrionalis (Baird). Unpublished Ph.D. Dissertation; University of Minnesota, [Minneapolis].

Breckenridge, W.J. 1943. The life history of the black-banded skink Eumeces septentrionalis septentrionalis (Baird). Amer. Midl. Nat. 29: 591-606.

Breckenridge, W.J. 1944. Reptiles and Amphibians of Minnesota. University of Minnesota Press; Minneapolis.

Bredin, E.J. 1981 (pers. comm.). Distribution of the northern prairie skink in Manitoba. Unpublished MS Report No. 81-7, Manitoba Department of

Natural Resources, Wildlife Branch, Biological Services. [cited with permission of author.]

Bredin, E.J. 1989 (pers. comm.). Status report on the northern prairie skink, Eumeces septentrionalis, in Canada. [Unpublished MS Report], The Amphibian and Reptile Subcommittee, Committee on the Status of Endangered Wildlife in Canada. [cited with permission of author.]

Broadley, D.G. 1959. The herpetology of southern Rhodesia. Part 1. Snakes. Bull. Mus. Comp. Zool. Harvard 120: 1-100.

Broadley, D.G. 1977. A revision of the African snakes of the genus Psammophylax Fitzinger (Colubridae). Occ. Pap. Natl. Mus. Monum. Rhodesia 1976B 6: 1-44.

Broadley, D.G. 1983. FitzSimons' Snakes of Southern Africa. Delta Books; Johannesburg.

Broadley, D. G., and E. V. Cock. 1975a. Snakes of Rhodesia. Longman Rhodesia (Bundu Series); Salisbury.

Broadley, D. G., and E. V. Cock. 1975b. Snakes of Zimbabwe. [1982 reprinted, retitled edition]. Longman Zimbabwe (Bundu Series); Salisbury.

Brodie, E.D., Jr., R.A. Nussbaum, and R.M. Storm. 1969. An egg-laying aggregation of five species of Oregon reptiles. Herpetologica 25: 223-227.

Broer, W. 1983. Erfolgreiche Haltung und Nachzucht des Teppich- oder Rautenpythons, Python spilotus variegatus (Gray, 1844) (Serpentes: Boidae). Salamandra 19: 84-93.

Brown, W.S. 1987. Hidden life of the timber rattler. Natl. Geogr. 172: 128-138.

Browne, T. 1646. Pseudodoxia Epidemica: or, Enquiries into the Very Many Received Tenets, and Commonly Presumed Truths. Edward Dod; London.

Brunner, J.C. 1979. Captive breeding of Columbian rainbow boas Epicrates cenchris crassus. [2]:39-47. In R.A. Hahn (ed), 2nd Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Bulian, J., and W. Broer. 1984. Ein seltener Python und seine Nachzucht: Liasis mackloti (Serpentes: Boidae). Salamandra 20: 205-211.

Burchfield, P.M. 1977. Breeding the king cobra Ophiophagus hannah at Brownsville Zoo. Int. Zoo Yearb. 17: 136-140.

Burghardt, G.M. 1973. Chemical release of prey attack: extension to naive newly hatched lizards, Eumeces fasciatus. Copeia 1973: 178-181.

Burroughs, J. 1908. Leaf and Tendril. Houghton Mifflin Company; Boston and New York.

Burt, C.E. 1928. The lizards of Kansas. Trans. Acad. Sci. St. Louis 26: 1-84.

Burt, C.E. 1937. The lizards of the southeastern United States. Trans. Kansas Acad. Sci. 40: 349-366.

Burt, C.E., and M.D. Burt. 1935. Further records of the ecology and distribution of amphibians and reptiles in the Middle West. Amer. Midl. Nat. 16: 311-336.

Burt, C.E., and W.L. Hoyle. 1934. Additional records of the reptiles of the central prairie region of the United States. Trans. Kansas Acad. Sci. 37: 193-216.

Burton, M., and R. Burton. 1984. Encyclopedia of Reptiles, Amphibians & Other Cold-blooded Animals. BPC Publishers; [London].

Burton, R.F. 1885-1888. The Book of a Thousand Nights and a Night. The Burton Club; [London].

Cagle, F.R. 1940. Eggs and natural nests of Eumeces fasciatus. Amer. Midl. Nat. 23: 227-233.
Cagle, F.R. 1942. Herpetological fauna of Jackson and Union Counties, Illinois. Amer. Midl. Nat. 28: 164-200.
Campbell, H., and R.S. Simmons. 1961. Notes on the eggs and young of Eumeces callicephalus Bocourt. Herpetologica 17: 212-213.
Campbell, J.A. 1973. A captive hatching of Micrurus fulvius tenere (Serpentes, Elapidae). J. Herp. 7: 312-315.
Campbell, J.A., and H.R. Quinn. 1975. Reproduction in a pair of Asiatic cobras, Naja naja (Serpentes, Elapidae). J. Herp. 9: 229-233.
Campden-Main, S.M. 1970. A Field Guide to the Snakes of South Vietnam. United States National Museum; Washington, D.C.
Carey, W.M. 1975. The rock iguana, Cyclura pinguis, on Anegada, British Virgin Islands, with notes on Cyclura ricordi and Cyclura cornuta on Hispaniola. Bull. Florida State Mus. Biol. Sci. 19: 189-233.
Carl, G.C. 1944. The Reptiles of British Columbia. British Columbia Provincial Museum; Victoria.
Carpenter, C.C. 1966. The marine iguana of the Galápagos Islands, its behavior and ecology. Proc. California Acad. Sci. Fourth Ser. 34: 329-376.
Carpenter, C.C., and G.W. Ferguson. 1977. Variation and evolution of stereotyped behavior in reptiles. 7: 335-508. In C. Gans and D.W. Tinkle (eds), Biology of the Reptilia. Ecology and Behavior A. Academic Press; New York.
Carr, A. 1952. Handbook of Turtles. The Turtles of the United States, Canada, and Baja California. Comstock Publishing Associates; Ithaca and London.
Carter, D.B. 1989. Evidence of parental involvement in the release of hatchling Varanus varius from termite mounds. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [58]
Carver, J. 1778. Travels Through the Interior Parts of North-America, in the Years 1766, 1767, and 1768. J. Walter and S. Crowder; London.
Castillo S., C. 1989. Behavior and social organization in Sauromalus varius, Dickerson (Reptilia, Sauria, Iguanidae) in captivity. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [261].
Caycedo, G.C. 1978. Perdido en el Amazonas. Carlos Valencia Editores; Bogotá.
Charles, N., R. Field, and R. Shine. 1985. Notes on the reproductive biology of Australian pythons, genera Aspidites, Liasis and Morelia. Herpetol. Rev. 16: 45-48.
Chateaubriand, F.R. de 1827. Voyage en Amérique. Ladrocat; Paris.
Christian, K.A., and C.R. Tracy. 1982. Reproductive behavior of Galápagos land iguanas, Conolophus pallidus, on Isla Santa Fe, Galápagos. Pp. 366-379. In G.M. Burghardt and A.S. Rand (eds), Iguanas of the World. Their Behavior, Ecology, and Conservation. Noyes Publications; Park Ridge, New Jersey.
Christian, T. 1981. A field trip to the McIlwraith Range - Cape York Peninsula. Monitor-Bull. Victorian Herp. Soc. 1(2): 40-56.
Claffey, O., and B. Johnson. 1982a. Captive reproduction of the sheltopusik (Ophisaurus apodus). AAZPA Reg. Conf. Proc. 1982: 103-106.
Claffey, O., and B. Johnson. 1982b. Captive reproduction of the sheltopusik (Ophisaurus apodus). Animal Keepers Forum 9: 329-332.
Clark, B. 1988. Breeding the albino Burmese python. Vivarium 1: 18-21.

Clark, B., and T. Tytle. 1983. Python molurus bivittatus (Burmese python). Morphology. Herpetol. Rev. 14: 121.
Clausen, R.T. 1938. Notes on Eumeces anthracinus in central New York. Copeia 1938: 3-7.
Coborn, J. 1975. Report on the reproduction of captive Indian pythons (Python molurus bivittatus). Brit. J. Herp. 5: 471-472.
Coborn, J. 1985. Howell Beginner's Guide to Snakes. Howell Book House; New York.
Cochran, P.A. 1989. Confirmation of the five-lined skink (Eumeces fasciatus) in northeastern Wisconsin. Bull. Chicago Herpetol. Soc. 24: 30-31.
Cogger, H.G. 1967. Australian Reptiles in Colour. East-West Center Press; Honolulu.
Cogger, H.G. 1974. Voyage of the banded iguana. Australian Nat. Hist. 18: 144-149.
Cogger, H.G., and A. Holmes. 1960. Thermoregulatory behaviour in a specimen of Morelia spilotes variegata Gray (Serpentes: Boidae). Proc. Linn. Soc. New South Wales 85: 328-333.
Collins, H.H., Jr. 1959. Complete Field Guide to American Wildlife. East, Central and North. Harper and Row, Publishers; New York.
Collins, J.T. 1975. Observations on reproduction in the southern coal skink (Eumeces anthracinus pluvialis Cope). Trans. Kansas Acad. Sci. 77: 126-127.
Conant, R. 1938. The reptiles of Ohio. Amer. Midl. Nat. 20: 1-200.
Conant, R. 1951. The Reptiles of Ohio. University of Notre Dame Press; Notre Dame, Indiana.
Conant, R., and A. Downs, Jr. 1940. Miscellaneous notes on the eggs and young of reptiles. Zoologica 25: 33-48.
Congdon, J.D. 1989. Proximate and evolutionary constraints on energy relations of reptiles. Physiol. Zool. 62: 356-373.
Conners, S. 1985. Snake breeding projects at the Cheyenne Mountain Zoo. Colorado Herpetol. Soc. [Newsl.] 13(5): 1-2.
Cook, F.A. 1943. Alligators and lizards of Mississippi. Surv. Bull. Mississippi Game Fish Comm. Jackson, Mississippi (1): 1-20.
Cook, F.A. 1954. Snakes of Mississippi. Surv. Bull. State Game Fish Comm. Jackson, Mississippi [2]: 1-40.
Coombs, W.P., Jr. 1982. Juvenile specimens of the ornithischian dinosaur Psittacosaurus. Paleaontology (London) 25: 89-108.
Cooper, J.E., R.L. Franz, F. Groves, J.D. Hardy, Jr., H.S. Harris, Jr., D.S. Lee, P. Wemple, and R.G. Tuck. 1973. Endangered amphibians and reptiles of Maryland. Bull. Maryland Herpetol. Soc. 9: 42-99.
Cooper, W.E., Jr., and L.J. Vitt. 1985. Blue tails and autotomy: enhancement of predation avoidance in juvenile skinks. Z. Tierpsychol. 70: 265-276.
Cooper, W.E., Jr., L.J. Vitt, L.D. Vangilder, and J.W. Gibbons. 1983. Natural nests and brooding behavior of Eumeces fasciatus. Herpetol. Rev. 14: 65-66.
Cope, E.D. 1900. The crocodilians, lizards, and snakes of North America. Rept. U.S. Natl. Mus. 1898: 153-1294.
Corrington, J.D. 1929. Herpetology of the Columbia, South Carolina region. Copeia (172): 58-83.
Cowles, R.B. 1944. Parturition in the yucca night lizard. Copeia 1944: 98-100.
Cox, M.J. 1989. Notes on the natural history (breeding) of Naja kaouthia and Python molurus bivittatus in Thailand. Bull. Chicago Herpetol. Soc. 24: 127-128.

Crawford, T. 1984. Herping notes from the deep south. Iowa Herpetol. Soc. Newsl. 8(1): 2-3.

Crutchfield, T.E. 1982. Courtship and nesting behavior in Cyclura nubila lewisi. [5]: 54-56. In R.A. Hahn (ed), 5th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Crutchfield, T.E. 1986. The first captive propagation of the Grand Cayman Island iguana Cyclura n. lewisi. [9]:165-170. In S. McKeown, F. Caporaso and K.H. Peterson (eds), 9th International Herpetological Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Daniel, J.C. 1983. The Book of Indian Reptiles. Bombay Natural History Society; Bombay.

Dattatri, S. 1987. Breeding the king cobra (Ophiophagus hannah) in captivity. J. Bombay Nat. Hist. Soc. 84: 222-227.

Davis, D.M. 1968. A study of variation in the North American lizards of the fasciatus group of the genus Eumeces (Scincidae). Unpublished Ph.D. Dissertation; Duke University, [Durham].

Dellinger, T. 1989. Energetic costs of reproduction in a polygynous reptile: the marine iguana. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [83]. [Information not provided in abstract.]

Deoras, P.J. 1965. Snakes of India. Secretary, National Book Trust; New Delhi.

Deraniyagala, P.E.P. 1955. A Colored Atlas of Some Vertebrates from Ceylon. Volume Three. Serpentoid Reptilia. Ceylon National Museums; Colombo.

De Waal, S.W.P. 1978. The Squamata (Reptilia) of the Orange Free State, South Africa. Mem. Nas. Mus. (Bloemfontein) 11: 1-160.

Dewsbury, D.A. 1985. Paternal behavior in rodents. Amer. Zool. 25: 841-852.

Digney, T., and T. Tytle. 1983. Captive maintenance and propagation of the lizard genus Phelsuma. [6]:141-156. In D. L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Ditmars, R.L. 1904. Observations on lacertilians. Eighth Ann. Rept. New York Zool. Soc. [8]: 146-160.

Ditmars, R.L. 1907. The Reptile Book. Doubleday, Page & Company; Garden City.

Ditmars, R.L. 1910. Reptiles of the World. Macmillan Company; New York.

Ditmars, R.L. 1931. Snakes of the World. Macmillan Company; New York.

Ditmars, R.L., and W. Bridges. 1937. Wild Animal World. Behind the Scenes at the Zoo. D. Appleton-Century Company; New York/London.

Doflein, F. 1914. Das Tier als Glied des Naturganzen. II Band: 1-960. In R. Helle and F. Doflein (eds.), Tierbau und Tierleben. B. G. Teubner; Leipzig und Berlin.

Donisthorpe, H. 1947. Lizards and snakes. Pp. 418-439. In Anonymous (ed), Wild Life the World Over, Illustrated. Wise & Company; New York.

Dowling, H.G. 1950. A new southeastern record for the coal skink. Copeia 1950: 235.

Dowling, H.G. 1960. Thermisters, air conditioners & insecticides. Anim. King. 63: 202-207.

Dowling, H.G. 1961. How old are they and how big do they grow? Anim. King. 64: 171-175.

Dowling, H.G. 1986. Snakes. Pp. 112-127. In T.R. Halliday and K. Adler (eds), The Encyclopedia of Reptiles and Amphibians. Facts on File Publications; New York.

Druce, G.C. 1910. The amphisbaena and its connexions in ecclesiastical art and architecture. Archeol. J. 67(268); Ser. 2 17(4): 285-317.

Duckett, J.E. 1964. The cobras of Batu Kawan, Province Wellesley. Malayan Nat. J. 18: 210-211.

Duellman, W.E., and A. Schwartz. 1958. Amphibians and reptiles of southern Florida. Bull. Florida State Mus. Biol. Sci. 3: 181-324.

Duellman, W.E., and L. Trueb. 1986. Biology of Amphibians. McGraw-Hill Book Company; New York.

Duméril, [A.-M.-C.] 1842. Sur le développement de la chaleur dans les oeufs des serpents, et sur l'influence attribuée à l'incubation de la mère. Compt. Rend. Hebd. Séan. Acad. Sci. Paris 14: 193-203.

Dundee, H.A., and D.A. Rossman. 1989. The Amphibians and Reptiles of Louisiana. Louisiana State Universtiy Press; Baton Rouge.

Dunn, E. R. 1920. Some reptiles and amphibians from Virginia, North Carolina, Tennessee and Alabama. Proc. Biol. Soc. Washington 33: 129-138.

Dunn, R. W. 1979a. Breeding Children's pythons Liasis childreni at Melbourne Zoo. Int. Zoo Yearb. 19: 89-90.

Dunn, R. W. 1979b. Breeding African pythons Python sebae at Melbourne Zoo. Int. Zoo Yearb. 19: 91-92.

Duvall, D. 1986. A new question of pheromones: aspects of possible chemical signaling and reception in the mammal-like reptiles. Pp. 219-238. In N. Hotton, III, P.D. MacLean, J.J. Roth, and E.C. Roth (eds.), The Ecology and Biology of Mammal-like Reptiles. Smithsonian Institution Press; Washington and London.

Duvall, D., M.B. King, and K.J. Gutzwiller. 1985. Behavioral ecology and ethology of the prairie rattlesnake. Natl. Geogr. Res. 1: 80-111.

Duvall, D., J. Trupiano, and H.M. Smith. 1979. An observation of maternal behavior in the Mexican desert spiny lizard, Sceloporus rufidorsum. Trans. Kansas Acad. Sci. 82: 60-62.

Ehmann, H. 1988. Post-oviposition egg care in three Australian skink lizards. Herpetofauna (Sydney) 18: 26-29.

Eibl-Eibesfeldt, I. 1966. Das Verteidigen der Eiablageplätze bei der Hood-Meerechse (Amblyrhynchus cristatus venustissimus). Z. Tierpsychol. 23: 627-631.

Eijsden, E. H. T. van. 1978. Over de gecko's Gehyra mutilata en Hemiphyllodactylus t. typus, immigranten op Mauritius. Lacerta 36: 72-79.

Ellis, T. L., and M.A. Chappell. 1987. Metabolism, temperature relations, maternal behavior, and reproductive energetics in the ball python (Python regius). J. Comp. Physiol. B 157: 393-402.

Ellison, T.L. 1985. Iguana iguana in captivity. [8]: 93-95. In S. McKeown and F. Caporaso (eds), 8th Annual International Herpetological Symposium on Captive Propagation & Husbandry. Zoological Consortium; Thurmont, Maryland.

Emsley, M. 1977. Snakes of Trinidad and Tobago. Bull. Maryland Herpetol. Soc. 13: 201-304.

Engelmann, W.-E., and F.J. Obst. 1981. Mit gespaltener Zunge. Aus der Biologie und Kulturgeschichte der Schlangen. Herder Feiburg; Basel, Wien.

Ernst, C.H., and R.W. Barbour. 1989. Turtles of the World. Smithsonian Institution Press; Washington, D.C. and London.

Evans, G.H. 1903. The king-cobra, or hamadryad-Naia bungarus (Boulenger), Ophiophagus elaps (Günther). J. Bombay Nat. Hist. Soc. 14: 409-418.

Evans, G.H. 1905. Breeding of the banded krait (Bungarus fasciatus) in Burma. J. Bombay Nat. Hist. Soc. 16: 519-520.

Evans, H.E., and R. M. Roecker. 1951. Notes on the herpetology of Ontario, Canada. Herpetologica 7: 69-71.

Evans, L.T. 1959. A motion picture study of maternal behavior of the lizard, Eumeces obsoletus Baird and Girard. Copeia 1959: 103-110.

Fayrer, T. 1870. The Thanatophidia of India, Being a Description of the Venomous Snakes of the Indian Peninsula with an Account of the Influence of Their Poison on Life and a Series of Experiments. J. and A. Churchill; London.

Fitch, A.V. 1964. Temperature tolerances of embryonic Eumeces. Herpetologica 20: 184-187.

Fitch, H.S. 1954. Life history and ecology of the five-lined skink, Eumeces fasciatus. Univ. Kansas Publ. Mus. Nat. Hist. 8: 1-156.

Fitch, H.S. 1955. Habits and adaptations of the great plains skink (Eumeces obsoletus). Ecol. Monogr. 25: 59-83.

Fitch, H.S. 1956. Temperature responses of free-living amphibians and reptiles of northeastern Kansas. Univ. Kansas Publ. Mus. Nat. Hist. 8: 419-475.

Fitch, H.S. 1960. Autecology of the copperhead. Univ. Kansas Publ. Mus. Nat. Hist. 13: 85-288.

Fitch, H.S. 1967. Ecological studies of lizards on the University of Kansas Natural History Reservation. Pp. 30-34. In W.W. Milstead (ed), Lizard Ecology: a Symposium. University of Missouri Press; Columbia.

Fitch, H.S. 1970. Reproductive cycles in lizards and snakes. Univ. Kansas Misc. Publ. Mus. Nat. Hist. (52): 1-247.

Fitch, H.S. 1982. Reproductive cycles in tropical reptiles. Occ. Pap. Mus. Nat. Hist. Univ. Kansas (96): 1-53.

Fitch, H.S. 1986. Ecology of the slender glass lizard. Soc. Stud. Amphib. Rept.-Herp. Leag. Meet. [Unpubl. Abst.] (Springfield, Missouri) 1986: 79.

Fitch, H.S. 1989. A field study of the slender glass lizard, Ophisaurus attenuatus, in northeastern Kansas. Occ. Pap. Mus. Nat. Hist. Univ. Kansas (125): 1-50.

Fitch, H.S., and P.L. von Achen. 1977. Spatial relationships and seasonality in the skinks Eumeces fasciatus and Scincella laterale in northeastern Kansas. Herpetologica 33: 303-313.

Fitzgerald, L.A., J.M. Chani, and O.E. Donadio. 1989. Tupinambis lizards in Argentina: implementing management of a traditionally exploited resource. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [101].

Fitzgerald, L.A., J.M. Chani, and O.E. Donadio. In press. Tupinambis lizards in Argentina: implementing management of a traditional exploitation system. In J.G. Robinson and K.H. Redford (eds), Neotropical Wildlife Use and Conservation. University of Chicago Press; Chicago.

Fitzgerald, M., and G.A. Mengden. 1987. Captive breeding and oviparity in Pseudechis butleri (Serpentes: Elapidae). Amphibia-Reptilia 8: 165-170.

FitzSimons, F.W. [1912]. The Snakes of South Africa. Their Venom and the Treatment of Snake Bite. T. Maskew Miller; Cape Town.

FitzSimons, F.W. 1930. Pythons and Their Ways. George G. Harrap & Company; London.

FitzSimons, V.F.[M.] 1943. The lizards of South Africa. Transvaal Mus. Mem. (1): 1-528.
FitzSimons, V.F.M. 1962. Snakes of Southern Africa. Purnell & Sons; Cape Town.
FitzSimons, V.F.M. 1970. A Field Guide to the Snakes of Southern Africa. Collins; London.
Fleay, D. 1943. The brown snake - Dangerous fellow. Victorian Nat. 59: 147-152.
Fleay, D. 1956. Talking of Animals. Jacaranda Press; Brisbane.
Fleck, J. 1987. Erst-Nachzucht von Agkistrodon acutus (Günther, 1888) (Serpentes: Crotalidae). Salamandra 23: 193-203.
Foekema, G.M.M. 1971. Broeden pythons moeilijk in gevangenschap? Lacerta 29: 107-110.
Foekema, G.M.M. 1975. Ontwikkeling en voortplanting van Python molurus bivittatus in een huiskamerterrarium. Lacerta 33: 123-139.
Forbes, W.A. 1881. Observations on the incubation of the Indian python (Python molurus), with special regard to the alleged increase of temperature during the process. Proc. Zool. Soc. London 1881: 960-967.
Fouquette, M.J., Jr., and H.L. Lindsay, Jr. 1955. An ecological survey of reptiles in parts of northwestern Texas. Texas J. Sci. 7: 402-421.
Fowlie, J.A. 1965. The Snakes of Arizona. Their Derivation, Speciation, Distribution, Description, and Habits - A Study in Evolutionary Herpeto-zoogeographic Phylogenetic Ecology. McGraw Hill; [New York].
Frank, W. 1979. Boas and Other Non-venomous Snakes. [English Language Edition]. T.F.H. Publications; Neptune, New Jersey.
Freiberg, M. 1982. Snakes of South America. T.F.H. Publications; Neptune, New Jersey.
Frith, C.B. 1977. A survey of the snakes of Phuket Island and the adjacent mainland areas of peninsular Thailand. Nat. Hist. Bull. Siam Soc. 26: 263-316.
Frye, F.L. 1981. Biomedical and Surgical Aspects of Captive Reptile Husbandry. Veterinary Medicine Publishing Company; Edwardsville, Kansas.
Fukada, H. 1964. Biological studies on snakes XI. Eggs and young of Trimeresurus okinavensis Boulenger. Bull. Kyoto Gakugei Univ. Ser. B (24): 7-11.
Fukada, H. 1965. Breeding habits of some Japanese reptiles (Critical review). Bull. Kyoto Gakugei Univ. Ser. B (27): 65-82.
Funk, R.S. 1982. Intrabrood variation in boas and pythons. [5]:17-29. In R.A. Hahn (ed), 5th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Gallwey, E. 1932. Eggs of grass snake. Naturalist (London) 910: 320.
Gehlbach, F.R. 1965. Herpetology of the Zuni Mountains region, northwestern New Mexico. Proc. U.S. Natl. Mus. 116: 243-332.
[Gerholdt, J.] 1984a. Herp hints. Minnesota Herpetol. Soc. Newsl. 4(6): 6.
[Gerholdt, J.] 1984b. Phantastic phenological phinds. Minnesota Herpetol. Soc. Newsl. 4(7): 10-12.
Gesneri [= Gessner], C. 1551-1587. Historiae Animalium. Zürich.
Getreuer, W.K. 1979. Voortplanting en ontwikkeling in het terrarium, van Python molurus bivittatus. Lacerta 37: 71-82.
Gibbons, J.R.H. 1984/85. On the trail of the crested iguana. Anim. King. 87(6): 40-45.
Gibbons, J.R.H., and I.F. Watkins. 1982. Behavior, ecology, and conservation of South Pacific banded iguanas, Brachylophus, including a newly

discovered species. Pp. 418-441. In G.M. Burghardt and A.S. Rand (eds), Iguanas of the World. Their Behavior, Ecology, and Conservation. Noyes Publications; Park Ridge, New Jersey.
Gilbert, B. 1987. Lizards that take to the desert like ducks to water. Smithsonian 18(5): 78-87.
Gittleman, J.L. 1981. The phylogeny of parental care in fishes. Anim. Behav. 29: 936-941.
Gloyd, H.K. 1937. A herpetological consideration of faunal areas in southern Arizona. Bull. Chicago Acad. Sci. 5: 79-136.
Gloyd, H.K., and R. Conant. 1989. Snakes of the Agkistrodon Complex: A Monographic Review. Society for the Study of Amphibians and Reptiles; Athens, Ohio.
Goldstein, R.C. 1941. Notes on the mud snake in Florida. Copeia 1941: 49-50.
Gosse, P.H. 1851. A Naturalist's Sojourn in Jamaica. Longman, Brown, Green and Longmans; London.
Gow, G.F. 1976. Snakes of Australia. Angus & Robertson Publishers; Sydney.
Gow, G.F. 1981. A new species of Python from central Australia. Australian J. Herp. 1: 29-34.
Gow, G.F. 1983. Snakes of Australia. Revised Edition. Angus & Robertson Publishers; Sydney.
Graves, B.M. 1988. Functions and causes of selected aspects of birthing rookery use by prairie rattlesnakes (Crotalus viridis viridis) in Wyoming. Unpublished Ph.D. dissertation, University of Wyoming, [Laramie].
Graves, B.M. 1989. Defensive behavior of female prairie rattlesnakes (Crotalus viridis) changes after parturition. Copeia 1989: 791-794.
Graves, B.M., and D. Duvall. 1983. A role for aggregation pheromones in the evolution of mammallike reptile lactation. Amer. Nat. 122: 835-839.
Green, E.E. 1905. On the nesting of the snake, Bungarus ceylonicus. Spolia Zeylanica 3: 158.
Green, N.B., and T.K. Pauley. 1987. Amphibians and Reptiles in West Virginia. University of Pittsburgh Press; Pittsburgh.
Greene, H.W., and B.E. Dial. 1966. Brooding behavior by female alligator lizards. Herpetologica 22: 303.
Greene, H.W., and G.V. Oliver, Jr. 1965. Notes on the natural history of the western massasauga. Herpetologica 21: 225-228.
Greer, A.E. 1970. Evolutionary and systematic significance of crocodilian nesting habits. Nature (London) 227: 523-524.
Greer, A.E. 1971. Crocodilian nesting habits and evolution. Fauna 2: 20-28.
Griehl, K. 1984. Snakes. Giant Snakes and Non-venomous Snakes in the Terrarium. English Language Edition. Barron's Educational Series; Woodbury, New York.
Gross, M.R., and R.C. Sargent. 1985. The evolution of male and female parental care in fishes. Amer. Zool. 25: 807-822.
Groves, J.D. 1981. Observations and comments on the post-parturient behaviour of some tropical boas of the genus Epicrates. Brit. J. Herp. 6: 89-91.
Groves, J.D. 1982. Egg-eating behavior of brooding five-lined skinks, Eumeces fasciatus. Copeia 1982: 969-971.
Grow, D. 1987. Amethystine pythons hatch at the Oklahoma City Zoo. AAZPA Newsl. 28(6): 16.
Guillette, L.J., Jr., and N. Hotton, III. 1986. The evolution of mammalian reproductive characteristics in therapsid reptiles. Pp. 239-250. In N.

Hotton, III, P.D. MacLean, J.J. Roth, and E.C. Roth (eds), The Ecology and Biology of Mammal-like Reptiles. Smithsonian Institution Press; Washington and London.

Guillette, L.J., Jr., A. Cree, and T.S. Gross. In review. Plasma prostaglandin and steroid concentrations during natural nest digging, oviposition and nest guarding in the tuatara, Sphenodon punctatus. Biol. Reprod.

Günther, A.[C.L.G.] 1862. [Remarks on the incubation of the female python in the Society's gardens.] Proc. Zool. Soc. London 1862: 1-2.

[Günther, A.C.L.G.] 1886. Python. 20:144. In T.S. Baynes and W.R. Smith (eds), Encyclopaedia Britannica. Ninth Edition. Adam and Charles Black; Edinburgh.

Gurung, K.K. 1983. Heart of the Jungle. André Deutsch with Tiger Tops PVT; London and Kathmandu, Nepal.

Haast, W.E., and R. Anderson. 1981. Complete Guide to Snakes of Florida. Phoenix Publishing Company; Miami.

Hahn, D.E., and L.D. Wilson. 1966. Variation in two broods of Farancia abacura reinwardti Schlegel (Serpentes: Colubridae) from Louisiana. J. Ohio Herpetol. Soc. 5: 159-160.

Hahn, W.L. 1909. Notes on the mammals and cold-blooded vertebrates of the Indiana University Farm, Mitchell, Indiana. Proc. U.S. Nat. Mus. 35: 545-581.

Håkansson, N.T. 1981. An annotated checklist of reptiles known to occur in the Gambia. J. Herp. 15: 155-161.

Hall, R.J. 1972. Ecology of a population of the great plains skink (Eumeces obsoletus). Univ. Kansas Sci. Bull. 49: 357-388.

Hall, R.J., and H.S. Fitch. 1972. Further observations on the demography of the great plains skink (Eumeces obsoletus). Trans. Kansas Acad. Sci. 74: 93-98.

Hamilton, W.J., Jr. 1958. Technophagy in the Florida five-lined skink. Herpetologica 14: 28.

Hamilton, W.J., Jr., and J.A. Pollack. 1958. Notes on the life history of the red-tailed skink. Herpetologica 14: 25-28.

Hammond, S. 1985. Reproductive behavior in the broadhead skink, Eumeces laticeps. Notes NOAH 12(4): 7-8.

Harlow, P., and G. Grigg. 1984. Shivering thermogenesis in a brooding diamond python, Python spilotes spilotes. Copeia 1984: 959-965.

Hasegawa, M. 1984. Biennial reproduction in the lizard Eumeces okadae on Miyake-Jima, Japan. Herpetologica 40: 194-199.

Hasegawa, M. 1985. Effect of brooding on egg mortality in the lizard Eumeces okadae on Miyake-Jima, Izu Islands, Japan. Copeia 1985: 497-500.

Hay, O. P. 1892. The batrachians and reptiles of the state of Indiana. Indiana Dept. Geol. Nat. Res. Seventeenth Ann. Rept. 1891 17: 409-609.

Hay, O.P. 1893. On the breeding habits, eggs, and young of certain snakes. Proc. U.S. Natl. Mus. 1892 15: 385-397.

Heaton-Jones, T.G. 1989. March meeting proceedings. Gainesville Herpetol. Soc. Newsl. 5(8): 32-34.

Hedges, N.G. 1983. Reptiles and Amphibians of East Africa. Kenya Literature Bureau; Nairobi.

Hediger, H. 1937. Selttsame Reptilien und Amphibien der Solomon-Inseln. Natur Volk 67: 590-595.

Hediger, H. 1968. Der Akademiestreit um die brütende Python. Neue Zürcher Zeitung 1968(351): 5.

Hediger, H. 1986. Strange reptiles and amphibians of the Solomon Islands. Bull. Chicago Acad. Sci. 21: 49-50. [English translation of Hediger, 1937.]

Heller, E. 1903. Papers from the Hopkins Stanford Galapagos Expedition, 1898-1899. XIV. Reptiles. Proc. Washington Acad. Sci. 5: 39-98.

Herklots, G.A.C. 1935. Land snakes of Hong Kong. Part III. Hong Kong Nat. 6: 192-207.

Herre, A.W.C.T., and D.S. Rabor. 1949. Notes on Philippine sea snakes of the genus Laticauda. Copeia 1949: 282-284.

Hibbard, C.W. 1964. A brooding colony of the blind snake, Leptotyphlops dulcis dissecta Cope. Copeia 1964: 222.

High, J. [1976]. Natural History of the Seychelles. Government Printer; Port Victoria.

[Hikida, T. 1975. An observation of the brooding habit in Eumeces okadae. Niigata Herpetol. J.] [in Japanese] 1(3): 6-7.

Hikida, T. 1981. Reproduction in the Japanese skink (Eumeces latiscutatus) in Kyoto. Zool. Mag. 90: 85-95.

Hilzheimer, M. 1910. Die Brutflege der Reptilien. Aus Natur. (Leipzig) 6: 361-367.

Hitz, R. 1983. Pflege und Nachzucht von Trachydosaurus rugosus Gray, 1827 im Terrarium (Sauria: Scincidae). Salamandra 19: 198-210.

Hodsdon, L.A., and J.F.W. Pearson. 1943. Notes on the discovery and biology of two Bahamen fresh-water turtles of the genus Pseudemys. Proc. Florida Acad. Sci. 6(2): 17-23.

Holmes, I. 1823. An Account of the United States of America. Caxton Press, Henry Fisher; London.

Holmstrom, W.F., Jr. 1981. Observations on the reproduction of the yellow anaconda Eunectes notaeus at the New York Zoological Park. Int. Zoo Yearb. 21: 92-94.

Holmstrom, W.F., Jr., and J.L. Behler. 1981. Post-parturient behavior of the common anaconda, Eunectes murinus. Zool. Gart. N.F. (Jena) 51: 353-356.

Honegger, R.E. 1969. Notes on some amphibians and reptiles at Zurich Zoo. Int. Zoo Yearb. 9: 24-28.

Honegger, R.E. 1970. Beitrag zur Fortpflanzungsbiologie von Boa constrictor und Python reticulatus (Reptilia, Boidae). Salamandra 6: 73-79.

Honegger, R.E. 1970/71. Beitrag zur Fortpflanzungsbiologie einiger tropischer Reptilien. Freunde Kölner Zoo 12: 175-179.

Honegger, R.E. 1975. Breeding and maintaining reptiles in captivity. Pp. 1-12. In R.D. Martin (ed), Breeding Endangered Species in Captivity. Academic Press; London.

Honegger, R.E. 1985. Additional notes on the breeding and captive management of the prehensile-tailed skink (Corucia zebrata). Herpetol. Rev. 16: 21-23.

Hopley, C.C. 1882. Snakes: Curiosities and Wonders of Serpent Life. Griffith and Farran; London.

Horner, J.R. 1982. Evidence of colonial nesting and `site fidelity' among ornithischian dinosaurs. Nature (London) 297: 675-676.

Horner, J.R. 1984. The nesting behavior of dinosaurs. Sci. Amer. 250(4): 130-137.

Horner, J.R. 1987. Ecologic and behavioral implications derived from a dinosaur nesting site. 2:50-63. In S.J. Czerkas and E.C. Olson (eds), Dinosaurs Past and Present. Natural History Museum of Los Angeles County/University of Washington Press; Seattle and London.

Horner, J.R., and J. Gorman. 1989. Digging Dinosaurs. Workman Publishing; New York.

Horner, J.R., and R. Makela. 1979. Nest of juveniles provides evidence of family structure among dinosaurs. Nature (London) 282: 296-298.

Hoy, P.R. 1883. Catalogue of the cold-blooded vertebrates of Wisconsin. Geol. Wisconsin Surv. 1873-1878 1: 422-435.

Hudson, R. 1983. The reptile reproduction program at the Fort Worth Zoo. [6]:328-349. In D.L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Huff, T.A. 1980. Captive propagation of the subfamily Boinae with emphasis on the genus *Epicrates*. (1):125-134. In J.B. Murphy and J.T. Collins (eds), Reproductive Biology and Diseases of Captive Reptiles. SSAR Contr. Herp. Society for the Study of Amphibians and Reptiles; [Athens, Ohio].

Huff, T.A. 1985. An overview of lizard husbandry and propagation with emphasis on the work at the Reptile Breeding Foundation. Pp. 51-76. In R.L. Gray (ed), Proceedings of the Northern California Herpetological Society and Bay Area Amphibian and Reptile Society 1985 Conference on Captive Propagation and Husbandry of Reptiles and Amphibians. Northern California Herpetological Society; Davis.

Hunter, J.D. 1824. Memoirs of a Captivity Among the Indians of North America, From Childhood to the Age of Nineteen: with Anecdotes Descriptive of Their Manners and Customs. To Which is Added, Some Account of the Soil, Climate, and Vegetable Productions of the Territory Westward of the Mississippi. Longman, Hurst, Rees, Orme, Brown and Green; London.

Hurter, J. 1911. Herpetology of Missouri. Trans. Acad. Sci. St. Louis 20:59-274.

Hutchison, V.H., H.G. Dowling, and A. Vinegar. 1966. Thermoregulation in a brooding female Indian python, *Python molurus bivittatus*. Science 151: 694-696.

Isemonger, R.M. 1968. Snakes of Africa. Books of Africa; Cape Town.

Iverson, J.B. 1977. Behavior and ecology of the rock iguana *Cyclura carinata*. Unpublished Ph.D. Dissertation; University of Florida, [Gainesville].

Iverson, J.B. 1979. Behavior and ecology of the rock iguana *Cyclura carinata*. Bull. Florida State Mus. Biol. Sci. 24: 175-358.

Jacobsen, N.H.G. 1985. Uit die Natuur ons Reptiele. CUM-Boeke; Roodepoort, South Africa.

Jayaram, K.C. 1974. Ecology and distribution of fresh-water fishes, Amphibia and reptiles. 23:517-584. In M.S. Mani (ed), Ecology and Biogeography of India. Monogr. Biol. Dr. W. Junk b.v., Publishers; The Hague.

Jennison, G. 1931. Cobras bred at Belle Vue Zoological Gardens, Manchester. Proc. Zool. Soc. London 1931: 1413.

Jes, H. 1987. Lizards in the Terrarium. English Edition. Barron's Educational Series; New York.

Johnson, B.J., and H.M. Smith. 1985. Sundowner, the forgotten ophidiophile. Bull. Maryland Herpetol. Soc. 21: 119-134.

Johnson, C.R. 1975. Defensive display behaviour in some Australian and Papuan-New Guinean pygopodid lizards, boid, colubrid and elapid snakes. Zool. J. Linn. Soc. 56: 265-282.

Johnson, T.R. 1977. Adult female reticulated python with eggs at St. Louis Zoo Reptile House on 12 February 1977. Herpetol. Rev. 8: 147 [photo].

Johnson, T.R. 1979. Notes on an egg clutch and a new county record for the broadhead skink (Eumeces laticeps). St. Louis Herpetol. Soc. Bull. 7(1): 12.

Johnson, T.R. 1987. The Amphibians and Reptiles of Missouri. Conservation Commission of the State of Missouri; Jefferson City.

Jones, R.E., and L.J. Guillette, Jr. 1982. Hormonal control of oviposition and parturition in lizards. Herpetologica 38: 80-93.

Joynson, H.W. 1917. A hamadryad's nest. J. Nat. Hist. Soc. Siam 2: 255.

Katuska, C.J. 1983. Husbandry and management of the genus Python. St. Louis Herpetol. Soc. Newsl. 4(4): 8-18.

Keenleyside, M.H.A. 1981. Parental care patterns of fishes. Amer. Nat. 117: 1019-1022.

Kelly, H.A., A.W. Davis, and H.C. Robertson. 1936. Snakes of Maryland. Natural History Society of Maryland; Baltimore.

Kendeigh, S.C. 1952. Parental care and its evolution in birds. Illinois Biol. Monogr. 22: 1-356.

Kennedy, J.P. 1956. An arboreal nest of the five-lined skink, Eumeces fasciatus, in eastern Texas. Southwest. Nat. 1: 158-159.

Kennedy, J.P. 1964. Natural history notes on some snakes of eastern Texas. Texas J. Sci. 16: 210-215.

Kern, E. 1907. Riesenschlangen in der Gegangenschaft ausgebrütet. D. Umschau, Wissensch. Mag. 11: 1050-1052.

Kinghorn, J.R. 1956. The Snakes of Australia. Angus & Robertson; Sydney.

Kipling, R. 1894. The Second Jungle Book. Harper & Brothers; [London].

Kirschner, A., and A. Ochsenbein. 1988. Beobachtungen zu Haltung und Nachzucht von Python regius (Shaw, 1802) (Serpentes: Boidae). Salamandra 24: 193-202.

Klauber, L.M. 1972. Rattlesnakes. Their Habits, Life Histories, and Influence on Mankind. Second Edition. University of California Press; Berkeley and Los Angeles.

Kleiman, D.G. 1985. Paternal care in New World primates. Amer. Zool. 25: 857-859.

Kleiman, D.G., and J.R. Malcolm. 1981. The evolution of male parental investment in mammals. Pp. 347-388. In D.G. Gubernick and P.H. Klopfer (eds), Parental Care in Mammals. Plenum Press; New York.

Klots, A.B. 1930. Notes on Amphibia and Lacertilia collected at Weymouth, N. J. Copeia (173): 109-111.

Koba, K., K. Tanaka, K. Yoshizaki, and E. Nakamoto. 1970. Eggs and hatching of the hime-habu, Trimeresurus okinavensis Boulenger. Snake 2: 111-121.

Koch, H. 1972. Vie en captivité et reproduction de Gekko gecko L. Aquarama 6: 44-45.

Köhler, W. 1907. Riesenschlangen in Gefangenschaft ausgebrütet. Blätt. Aquar.-Terrarienk. (Stuttgart) 18: 498.

Kopstein, F. 1938. Eien Beitrag zur Eierkunde und zur Fortpflanzung der Malaiischen Reptilien. Bull. Raffles Mus. (Singapore) (14): 81-167.

Kratzer, H. 1962. Überraschende Nachzucht von Chondropython viridis. Aquar.-Terrar.- Z. (Stuttgart) 15: 117-119.

Krefft, G. 1869. The Snakes of Australia. An Illustrated and Descriptive Catalogue of All the Known Species. Thomas Richards, Government Printer; Sydney.

Krefft, P. 1926. Das Terrarium. 2 Aufluge. Pfenningstorff; Berlin.

Krieg, H. 1925. Biologische Reisestudien in Südamerika. IV. Beobactungen über die ‚Iguana' (Tupinambis teguixin L.). Z. Wissensch. Biol. Abt. A.; Z. Morph. Ökol. Tiere A3: 441-451.

Krogh, A. 1916. The Respiratory Exchange of Animals and Man. Longmans, Green and Company; London.

Kudryavtsev, S.V., and V.E. Frolov. 1984. On the reproductive biology of the Russian rat snake Elaphe s. schrencki (Squamata: Colubridae). [7]:134-138. In P.J. Tolson (ed), 7th Annual Reptile Symposium on Captive Propagation and husbandry. Zoological Consortium; Thurmont, Maryland.

Lallemant, G.F.M.A. 1929. De Reuzen leguaan (Varanus komodoensis) op de eilanden Komodo en Rintja. Trop. Natur 18(8): 125-128.

Lamarrepicquot [= Lamarre-Picquot, P.]. 1835a. Ophiologie. L'Institut. Sect. I (Paris, Bureau 19[de l'Institut.]) 3: 70.

Lamarre-Picquot, P. 1835b. Réponse pour servir de réfutation aux opinions et à la critique du rapport de M. Constant Duméril, etc. 64 pp. [Unpublished brochure].

Lamarre-Picquot, [P.] 1842. Troisième mémoire sur l'incubation et autres phénomènes observés chez lez ophidiens. Compt. Rend. Hebd. Séan. Acad. Sci. 14: 164.

Lamarre-Picquot, [P.] 1858a. [l'Incubation des ophidiens]. Compt. Rend. Hebd. Sean. Acad. Sci. 47:458.

Lamare-Picquot [=Lamarre-Picquot, P.]. 1858b. [Adresse une note supplémentaire...]. Compt. Rend. Hebd. Séan. Acad. Sci. 47: 525-526.

Lang, J.W. [1982.] Distribution and abundance of the five-lined skink (Eumeces fasciatus) in Minnesota. Unpublished Final Report to the Nongame Wildlife Program, Minnesota Department of Natural Resources; St. Paul.

Lang, J.W. 1983. Blue devils in Rock Valley: our search for the five-lined skink. Minnesota Volunteer 1983(July-August): 40-46.

Lang, J.W. 1987. Crocodilian behaviour: implications for management. Pp. 273-293. In G.J.W. Webb and S.C. Manolis (eds), Wildlife Management: Crocodiles and Alligators. Surrey Beatty & Sons; Chipping Norton, Australia.

Langerwerf, B. 1981. The southern alligator lizard, Gerrhonotus multicarinatus Blainville 1935: its care and breeding in captivity. Brit. Herpetol. Soc. Bull. (4): 21-25.

Langerwerf, B. 1984. Techniques for large-scale breeding of lizards from temperate climates in greenhouse enclosures (breeding many species of lizards in captivity, aiming the maintenance of populations of each species outside their natural habitat). Acta Zool. Pathol. Antverp. (78): 163-176.

Lanworn, R.A. 1972. The Book of Reptiles. Hamlyn Publishing Group; Feltham, England.

La Panouse, R. de, and C. Pellier. 1973. Ponte d'un python réticulé (Python reticulatus) élevé en terrarium, et incubation des oeufs. Bull. Mus. Natl. Hist. Nat. Ser. 3, Zool. (Paris) 79(105): 37-48.

Laszlo, J. 1984. Further notes on reproductive patterns of amphibians and reptiles in relation to captive breeding. Int. Zoo Yearb. 23: 166-174.

Lawler, H.E., and J.L. Jarchow. 1986. A captive management plan for large iguanine lizards using the Isla San Esteban chuckwalla Sauromalus varius Dickerson as a model. [9]:137-164. In S. McKeown, F. Caporaso, and K.H. Peterson (eds), 9th International Herpetological Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Leakey, J.H.E. 1968. Observations made on king cobras in Thailand during May 1966. J. Natl. Res. Counc. Thailand 5: 1-10.

Lederer, G. 1928. Zuchtereignis im Frankfurter Aquarium. D. Umschau, Wissensch. Mag. 32: 425-426.

Lederer, G. 1944. Nahrungserwerb, Entwicklung, Paarung und Brutfürsorge von Python reticulatus (Schneider). Zool. Jahrb. Abt. f; Anat. Ont. Tiere (Jena) 68: 363-398.
Lederer, G. 1956. Fortpflanzungsbiologie und Entwicklung von Python molurus molurus (Linné) und Python molurus bivittatus (Kühl). Aquar.- Terrar.- Z. (Stuttgart) 9: 243-248.
Lehmann, C., and K.P. Lehmann. 1983. Haltung und Vermehrung des Königspythons, Python regius, in Terrarium. Aquar. Terr. (Berlin) 30:100-103.
Leigh, C. 1910. An oviparous Indian viper. Field (London) 115(2975): 3.
Leigh, C. 1926. Notes on snakes. J. Bombay Nat. Hist. Soc. 31: 227-228.
Leigh, C. 1936. Breeding of pythons. Field (London) 1936: 1556.
Le Roux, S.F. 1964. A note on the spotted skaapsteker (Psammophylax rhombeatus Linnaeus). African Wild Life 18: 113-115.
Leviton, A.E. [1972]. Reptiles and Amphibians of North America. Doubleday and Company; New York.
Liat, L.B. 1982. Poisonous Snakes of Peninsular Malaysia. Second Edition. Malayan Nature Society; Kuala Lumpur.
Lillywhite, H.B. 1988. Biology of the Reptilia. Vol. 16. Ecology B. Defense and Life History. [Book review]. Copeia 1988: 1102-1104.
Lockwood, S. 1883. Maternal anxiety in a horned toad. Amer. Nat. 17: 682-683.
Logan, T. 1973. Observations on the ball python (Python regius) in captivity at Houston Zoological Gardens. J. Herpetol. Assoc. Africa (10): 5-8.
Lokke, J. 1985. A question of parental care in the timber rattlesnake Crotalus horridus. Nebraska Herpetol. Newsl. 6(4): 4-5.
Lombard, J. 1987. News. 2 May, 1987. Nebraska Herpetol. Newsl. 8(3): 1-2.
Loop, M.S., and S.A. Scoville. 1972. Response of newborn Eumeces inexpectatus to prey-object extracts. Herpetologica 28: 254-256.
Louwman, J.W.W. 1982. Breeding the six-footed tortoise Geochelone emys at Wassenaar Zoo. Int. Zoo Yearb. 22: 153-156.
Lutz, R. 1962. Fortpflanzung des Tigerpython. Aquar.- Terrar.- Z. (Stuttgart) 15: 277-279.
Lynn, W.G., and C. Grant. 1940. The herpetology of Jamaica. Bull. Inst. Jamaica Sci. Ser. (1): 1-148.

MacKay, R.D. 1973. The green python. Wildlife Australia 10(4): 108.
Malcolm, J.R. 1985. Paternal care in canids. Amer. Zool. 25: 853-856.
Malone, D.R. 1982. Captive care and breeding of the ball python. Bull. Chicago Herpetol. Soc. 17: 96-98.
Mansueti, R. 1948. "Scorpion" of the treetops. Nat. Hist. 57: 213-215+240.
Marshall, W. 1893. Brütende Schlangen. Blätt. Aquar.- Terrarienk. (Stuttgart) 4: 158-161.
Martin, W.H. 1986a. Reproduction of the timber rattlesnake in northwestern Virginia. Herp. Leag. - Soc. Stud. Amphib. Rept. Meet. [Unpubl. Abst.] (Springfield, Missouri) 1986: 94.
Martin, W.H. 1986b. Life history of the timber rattlesnake, Crotalus horridus. Investigator's Annual Report, U.S. Fish and Wildlife Service, National Park Service, U.S. Department of the Interior. Pp. 1.
Martin, W.H. 1989. The timber rattlesnake, Crotalus horridus in the Appalachian Mountains of eastern North America. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [193].
Martof, B. 1956. A contribution to the biology of the skink, Eumeces laticeps. Herpetologica 12: 111-114.

[Mathui, K. 1985. Amphibians and Reptiles of Japan. Shogakukau; Tokyo.] [in Japanese].

McAllister, C.T. 1987. Eumeces septentrionalis obtusirostris (southern prairie skink). Reproduction. Herpetol. Rev. 18: 75.

McCauley, R.H., Jr. 1939. Differences in the young of Eumeces fasciatus and Eumeces laticeps. Copeia 1939: 93-95.

McCauley, R.H., Jr. 1945. The Reptiles of Maryland and the District of Columbia. Robert H. McCauley, Jr.; Hagerstown, Maryland.

McClellan, W.H., R. Mansueti, and F. Groves. 1943. The lizards of central and southern Maryland. Proc. Nat. Hist. Soc. Maryland (8): 1-42.

McDiarmid, R.W. 1978. Evolution of parental care in frogs. Pp. 127-147. In G.M. Burghardt and M. Bekoff (eds), The Development of Behavior: Comparative and Evolutionary Aspects. Garland Press; New York.

McDowell, W. A., A. Farstad, W. White, and J.D. Price. (Eds.) 1982. The Holy Bible. The New King James Version. Thomas Nelson; Nashville.

McKeown, S., J.O. Juvik, and D.E. Meier. 1982. Observations on the reproductive biology of the land tortoises Geochelone emys and Geochelone yniphora in the Honolulu Zoo. Zoo Biol. 1: 223-235.

McKeown, S., and M.J. Miller. 1985. A brief note on the natural history, captive maintenance and propagation of the Seychelles giant skin-sloughing gecko Ailuronyx sechellensis. [8]:96-101. In S. McKeown and F. Caporaso (eds), 8th Annual International Herpetological Symposium on Captive Propagation & Husbandry. Zoological Consortium; Thurmont, Maryland.

McLain, J.M. 1983. Notes on boid reproduction at the Houston Zoological Park. [6]:141-156. In D.L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

McLain, R.B. 1899. Contributions to North American herpetology. Critical notes on a collection of reptiles, from the western coast of the United States. [Robert Baird McLain]; Wheeling, West Virginia. [also reprinted. 1971. Miscellaneous Publications. Facsimile Reprints in Herpetology. Society for the Study of Amphibians and Reptiles; Athens, Ohio.]

McPhee, D.R. 1979. The Observer's Book of Snakes and Lizards of Australia. Frederick Warne (Publishers); London.

Meade, G.P. 1937. Breeding habits of Farancia abacura in captivity. Copeia 1937: 12-15.

Meade, G.P. 1940. Maternal care of eggs by Farancia. Herpetologica 2: 15-20.

Meade, G.P. 1945. Further observations on Louisiana captive snakes. Copeia 1945: 73-75.

Meade, G.P. 1946. The natural history of the mud snake. Sci. Month. 63: 21-29.

Mease, J. 1807. A Geological Account of the United States Comprehending a Short Description of Their Animal, Vegetable and Mineral Productions, Antiquities and Curiosities. B. & T. Kite; Philadelphia.

Medsger, O.P. 1919. Egg-laying habits of the pilot snake, Callopeltis obsoletus. Copeia (69): 28-29.

Medsger, O.P. 1932. Nature Rambles. Summer. An Introduction to Country-lore. Frederick Warne & Company; New York and London.

Meek, G. 1946. Creatures of Mystery. J. W. Burke Company [for] Gray Meek; Macon, Georgia.

Mehaffey, D.T. 1986. Notes on captive propagation of the Solomon Island lizard Corucia zebrata at Fort Worth Zoo. Gainesville Herpetol. Soc. Newsl. 2(4): 12-15.

Mehrtens, J.M. 1987. Living Snakes of the World in Color. Sterling Publishing Company; New York.
Mell, R. 1929. Beiträge zur Fauna Sinica. IV. Grundzüge einer Ökologie der Chinesischen Reptilien und einer Herpetologischen Tiergeographie Chinas. Walter De Gruyter & Company; Berlin und Leipzig.
Mendelssohn, H., and A. Bouskila. 1989. Comparative ecology of Uromastix aegyptius and Uromastix ornatus in southern Israel and in southern Sinai. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [198].
Mertens, R. 1960. The World of Amphibians and Reptiles. English Translation. McGraw-Hill Book Company; New York.
Mertens, T.J. 1987. Some preliminary notes and observations on the tree goanna (Varanus varius) of Bowman Park, South Australia. Unpublished Report to Bowman Park Trust. 16 pp.
Meshaka, W.E., S.E. Trauth, and B.P. Butterfield. 1988. Natural nests, eggs, and hatchlings of the broad-headed skink, Eumeces laticeps, from northwestern Arkansas. Bull. Chicago Herpetol. Soc. 23: 104-105.
Meyer-Holzapfel, M. 1969. Notes on the breeding and egg-laying of some reptiles at Berne Zoo. Int. Zoo Yearb. 9: 20-23.
Michaels, S.J. 1986. Husbandry and captive propagation of the light phase Indian python, Python molurus molurus, with a report of a predominantly male clutch of offspring. Bull. Chicago Herpetol. Soc. 21: 53-64.
Miller, H. 1970. The cobra, India's "good snake." Natl. Geogr. 138: 392-409.
Miller, M.J. 1980. The leopard gecko, Eublepharis macularis (Gray). Bull. Chicago Herpetol. Soc. 15: 10-15.
Miller, M.J. 1982. Phelsumas. A case of monotypic care of a polytypic genus. [5]:103-118. In R.A. Hahn (ed), 5th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.
Miller, M.J. 1983a. Breeding the ground gecko Chondrodactylus angulifer angulifer (Peters, 1870) in captivity. [6]:171-175. In D.L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.
Miller, M.J. 1983b. Breeding the Turkistan plate-tailed gecko Teratoscineus scincus (Schlegel, 1858) in captivity. [6]:176-180. In D.L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.
Miller, M.[J.] 1984. Captive husbandry and propagation of geckos. Bull. Chicago Herpetol. Soc. 19: 41-54.
Miller, M.R. 1954. Further observations on reproduction in the lizard Xantusia vigilis. Copeia 1954: 38-40.
Minton, S.A., Jr. 1972. Amphibians and reptiles of Indiana. Indiana Acad. Sci. Monogr. (3): 1-346.
Minton, S.A., Jr., and M.R. Minton. 1973. Giant Reptiles. Charles Scribner's Sons; New York.
Moehn, L.D. 1980. Microhabitat preference in the broadhead skink. Bull. Chicago Herpetol. Soc. 15: 49-53.
Molchos, D. 1971. Photograph of Eumeces inexpectatus with her nest in situ, in a "hammock" near Miami, Florida. Herpetol. Rev. 3: 64 [photo].
Mole, R.R. 1924. The Trinidad Snakes. Proc. Zool. Soc. London 1924: 235-278.
Morafka, D.J. 1981. The status and distribution of the Bolson tortoise (Gopherus flavomarginatus). (12): 71-94. In R.B. Bury (ed), North

American Tortoises: Conservation and Ecology. Wildlife Research Report. United States Department of the Interior, Fish and Wildlife Service; Washington, D.C.

Mount, R.H. 1961. The natural history of the red-tailed skink, Eumeces egregius Baird. Unpublished Ph.D. Dissertation; University of Florida, [Gainesville].

Mount, R.H. 1963. The natural history of the red-tailed skink, Eumeces egregius Baird. Amer. Midl. Nat. 70: 356-385.

Mount, R.H. 1975. The Reptiles and Amphibians of Alabama. Auburn University Agricultural Experiment Station; Auburn.

Müller, M. 1970. Einige beobachtungen zur Fortpflanzungsbiologie bei Riesenschlange im Zoologischen Garten Leipzig. Aquar. Terrar. (Leipzig) 17: 162-164.

Munnig Schmidt, C.H. 1971. Waarnemingen bij het broeden van Python sebae. Lacerta 29: 105-106.

Munnig Schmidt, C.H. 1973. Verslag van een geslaagde kweek met de Africaanse python (Python sebae). Lacerta 31: 91-101.

Murphy, J.B., D.G. Barker, and B.W. Tryon. 1978. Miscellaneous notes on the reproductive biology of reptiles. 2. Eleven species of the family Boidae, genera Candoia, Corallus, Epicrates and Python. J. Herp. 12: 385-390.

Murphy, J.B., W.L. Lamoreaux, and D.G. Barker. 1981. Miscellaneous notes on the reproductive biology of reptiles. 4. Eight species of the family Boidae, genera Acrantophis, Aspidites, Candoia, Liasis and Python. Trans. Kansas Acad. Sci. 84: 39-49.

Murthy, T.S.N. 1986. The Snake Book of India. R. P. Singh Gahlot for International Book Distributors; Dehra Dun.

Mustill, F.J. 1936. A hamadryad's nest and eggs. J. Bombay Nat. Hist. Soc. 39: 186-187.

Naulleau, G. 1987. Les serpentes de France. 2e édition. Rev. Française Aquariol. 11(3-4): 1-56.

Neill, W.T. 1948. The lizards of Georgia. Herpetologica 4: 153-158.

Neill, W.T. 1964a. Taxonomy, natural history, and zoogeography of the rainbow snake, Farancia erytrogramma (Palisot de Beauvois). Amer. Midl. Nat. 71: 257-295.

Neill, W.T. 1964b. Viviparity in snakes: some ecological and zoogeographical considerations. Amer. Midl. Nat. 98: 35-55.

Neill, W.T., and R. Allen. 1962. Parturient anaconda, Eunectes gigas Latreille, eating own abortive eggs and foetal membranes. Quart. J. Florida Acad. Sci. 25: 73-75.

Nelson, W.F. 1963. Natural history of the northern prairie skink, Eumeces septentrionalis septentrionalis (Baird). Unpublished Ph.D. Dissertation; University of Minnesota, [Minneapolis].

Netting, M.G. 1927. A note on the egg-laying of Elaphe obsoleta (Say). Copeia (162): 29-30.

Nicander of Colophon. [135-133? BC]. [Theriaca]. Translated in A.S.F. Gow and A.F. Scholfield. 1953. Nicander. The Poems and Poetical Fragments. The Cambridge University Press; London.

Nicholson, E. 1870. Indian Snakes. Higgonbotham & Co.; Madras.

Niekisch, M. 1975. Plege und Nachzucht von Egernia cunninghami (Sauria, Scincidae). Salamandra 11: 130-135.

Niekisch, M. 1980. Terraristische Beobachtungen zur Biologie von Egernia cunninghami (Reptilia: Sauria: Scincidae). Salamandra 16: 162-176.

Noble, G.K. 1920. An early record for the oviposition and hatching of the milk snake. Copeia (88): 98-100.
Noble, G.K. 1921. Do snakes swallow their young for protection? Copeia (98): 54-57.
Noble, G.K. 1935. The brooding habit of the blood python and of other snakes. Copeia 1935: 1-3.
Noble, G.K., and E.R. Mason. 1932. The relation of water regulation to habitat selection of reptiles. Science 76: 545-546.
Noble, G.K., and E.R. Mason. 1933. Experiments on the brooding habits of the lizards Eumeces and Ophisaurus. Amer. Mus. Novit. (619): 1-29.
Nussbaum, R.A. 1985. The evolution of parental care in salamanders. Misc. Publ. Mus. Zool. Michigan (169): 1-50.

Obst, F.J., K. Richter, and U. Jacob. 1988. The Completely Illustrated Atlas of Reptiles and Amphibians for the Terrarium. English-language Edition. T. F. H. Publications; Neptune City, New Jersey.
Olexa, A. 1979. The green python, Chondropython viridis (Schlegel, 1872) and its reproduction in captivity. Gazella 2: 83-87.
Oliver, J.A. 1956. Reproduction in the king cobra, Ophiophagus hannah Cantor. Zoologica 41: 145-152.
[Orlov, N.L.] 1986. [Facultative endogenous thermoregulation in python snakes (Boidae, Pythoninae) and correlation between endothermic reactions and behavioural heat regulation in these snakes.] [in Russian Cyrillic] Zool. Zhur. 65: 551-559.
Orlow [=Orlov], N.L. 1982. Die Fortpflanzung der Pythons P. regius und Liasis mackloti und der Kletternattern Elaphe climacophora und E. quadrivirgata im Terrarium. Herpetofauna (Weinstadt) (19): 25-30.
Osadnik, G. 1984. An investigation of egg laying in Phelsuma (Reptilia: Sauria: Gekkonidae). Amphibia-Reptilia 5: 125-134.

Parker, F. [1982]. The snakes of Western Province. Wildlife in Papua New Guinea (Div. Wildlife, Konedobu) (82/1): 1-78.
Parker, H.W. 1963. Snakes. Robert Hale; London.
Parmalee, P.W. 1955. Reptiles of Illinois. Illinois State Mus. Pop. Sci. Ser. 5: 1-88.
Patsch, H.-J. 1943. Fortpflanzungsbiologische Beobachtungen an Python bivittatus. Zool. Gart. N.F. (Leipzig) 15: 132-133.
Patterson, R.W. 1975. Hatching the African python Python sebae in captivity. Int. Zoo Yearb. 14: 81-82.
Patterson, R.[W.], and A. Bannister. 1987. Reptiles of Southern Africa. C. Struik Publishers; Cape Town.
Perrone, M., and T.M. Zaret. 1979. Parental care patterns of fishes. Amer. Nat. 113: 351-361.
Peters, J.A. 1964. A Dictonary of Herpetology. Hafner Publishing Company; New York.
Peters, U. 1976. Gelungene Riesenschlangenzucht im Tarongo Zoo. Aquar.-Mag. (Stuttgart) 12: 525-527.
Peterson, K.H. 1989. Further comments on anecdotal data. Bull. Chicago Herpetol. Soc. 24: 190-191.
Petzold, H.-G. 1968. Zur Fortpflanzungsbiologie asiatischer Kobras (Naja naja). Zool. Gart. N.F. (Leipzig) 36: 133-146.
Petzold, H.-G. 1971. Blindschleiche und Scheltopusik. D. Neue Brehm - Buchërei (Wittenberg) 448: 85-86.

Pfeffer, P. 1959. Observations sur le varan de Komodo Varanus komodoensis. Ouwens 1912. Terre Vie 106: 195-243.
Phelps, T. 1981. Poisonous Snakes. Blandford Press; Poole, Dorset, U.K.
Pianka, E.R., and W.F. Giles. 1982. Notes on the biology of two species of nocturnal skinks, Egernia inornata and Egernia striata, in the Great Victoria Desert. West. Australian Nat. 15(2): 8-13.
Picado T., C. 1931. Serpientes Venenosas de Costa Rica. Sus Venenos. Seroterapia anti-ofídica. Sauter, Arias & Co.; San José.
Pienaar, U. DeV., W.D. Haacke, and N.H.G. Jacobsen. 1978. The Reptiles of the Kruger National Park. National Parks Board of South Africa; Pretoria.
Pinkert,--. 1893. Brütende Riesenschlangen. Zool. Gart. (Frankfurt Main) 34: 319.
Pitman, C.R.S. 1938. A Guide to the Snakes of Uganda. Uganda Society; Kampala.
Platt, D.R. 1969. Natural history of the hognose snakes Heterodon platyrhinos and Heterodon nasicus. Univ. Kansas Publ. Mus. Nat. Hist. 18: 253-420.
Pliny the Elder [=G. Plinius Secondus]. [d. AD 79]. Naturalis Historia. Translated in J. Bostock and H.T. Riley (eds). 1855. The Natural History of Pliny. Vol. II. Henry G. Bohn; London.
Pope, C.H. 1929. Notes on reptiles from Fukien and other Chinese provinces. Bull. Amer. Mus. Nat. Hist. 58: 335-487.
Pope, C.H. 1935. The Reptiles of China. Turtles, Crocodilians, Snakes, Lizards. Natural History of Central Asia. Vol. X. American Museum of Natural History; New York.
Pope, C.H. 1946. Snakes of the Northeastern United States. New York Zoological Society; New York.
Pope, C.H. 1955. The Reptile World. Alfred A. Knopf; New York.
Pope, C.H. 1961. The Giant Snakes. Alfred A. Knopf; New York.
Price, A.H. 1988. Observations on maternal behavior and neonate aggregation in the western diamondback rattlesnake, Crotalus atrox (Crotalidae). Southwest. Nat. 33: 370-373.

Ramsey, R.W., and A. Travis. 1960. The Common Wildlife of Panama. Russell W. Ramsey and Amos Travis, Printing Plant Mount Hope; Canal Zone.
Rand, W.M., and A.S. Rand. 1976. Agonistic behaviour in nesting iguanas: a stochastic analysis of dispute settlement dominated by the minimization of energy cost. Z. Tierpsychol. 40: 279-299.
Rao, [H.]S. 1957. History of our knowledge of the Indian fauna through the ages. J. Bombay Nat. Hist. Soc. 54: 251-280.
Rebouças-Spieker, R., and P.E. Vanzolini. 1978. Parturition in Mabuya macrorhyncha Hoge, 1946 (Sauria, Scincidae), with a note on the distribution of maternal behavior in lizards. Pap. Avulsos Zool. São Paulo 32: 95-99.
Reese, A.M. 1922. A note on the breeding habits of tegu. Copeia (110): 69-72.
Reinert, H.K., and W.R. Kodrich. 1982. Movements and habitat utilization by the massasauga, Sistrurus catenatus catenatus. J. Herp. 16: 162-171.
Reinert, H.K., and R.T. Zappalorti. 1988. Field observation of the association of adult and neonatal timber rattlesnakes, Crotalus horridus, with possible evidence for conspecific trailing. Copeia 1988: 1057-1059.
Reitinger, F.F., and J.K.S. Lee. 1978. Common Snakes of South East Asia and Hong Kong. Heinemann Educational Books; Kowloon, Hong Kong.

Reynolds, A.E. 1959. Eggs and young of the lizard, Eumeces fasciatus. Proc. Indiana Acad. Sci. 68: 367-378.
Reynolds, F.A., and A.N. Solberg. 1942. Notes on the life history of the mud snake. Copeia 1942: 25-26.
Riemer, W.J. 1957. The snake Farancia abacura: an attended nest. Herpetologica 13: 31-32.
Rieppel, O. 1970. Nachwuchs bei Dryophis nasutus (Lacépède) 1789. Aqua Terra 7: 85-88.
Rivers, G.M. 1874. The rattlesnake--Its poison and antidote. South. Med. Rec. 4: 505-517.
Robb, J. 1980. New Zealand Amphibians and Reptiles in Colour. William Collins Publishers; Auckland.
Roosevelt, T. 1926. Through the Brazilian Wilderness. Charles Scribner's Sons; New York.
Rose, W. 1929. Veld and Vlei. An Account of South African Frogs, Toads, Lizards, Snakes, & Tortoises. Specialty Press of South Africa; Cape Town.
Rose, W. 1950. The Reptiles and Amphibians of Southern Africa. Maskew Miller; Cape Town.
Rösler, H. 1988. Über das „Eirfressen" in Terrarium bei Arten der Gattung Phelsuma Gray, 1825 (Sauria: Gekkonidae). Salamandra 24: 20-26.
Ross, R.[A.] 1973. Successful mating and hatching of Children's python, Liasis childreni. HISS News-J. 1: 181-182.
Ross, R.A. 1978. The Python Breeding Manual. Institute for Herpetological Research; [Stanford].
Ross, R.[A.] 1980a. Erfolgreiche Zucht des Gefleckten Python (Liasis childreni). Herpetofauna (Weinstadt) (9): 28-29.
Ross, R.[A.] 1980b. The breeding of pythons (subfamily Pythoninae) in captivity. (1):135-139. In J.B. Murphy and J.T. Collins (eds), Reproductive Biology and Diseases of Captive Reptiles. SSAR Contr. Herp. Society for the Study of Amphibians and Reptiles; [Athens, Ohio].
Ross, R.[A.] 1983. Reproduction of the Children's python (Liasis childreni) in a terrarium. Litt. Serpentium (Engl. Ed.) 3: 18-21.
Ross, R.[A.], and R. Larman. 1977. Captive breeding in two species of python Liasis albertisii and L. mackloti. Int. Zoo Yearb. 17: 133-136.
Russell, F.E. 1983. Snake Venom Poisoning. Reprint Edition. Scholium International; Great Neck, New York.
Ruthven, A.G. 1911. A biological survey of the sand dune region on the south shore of Saginaw Bay, Michigan. Michigan Geol. Biol. Surv. Ser 2 (4): 1-347.

Schivre, M. 1972. Observations sur la reproduction de Python regius (Shaw). Aquarama 6: 67.
Schleich, H.H., and W. Kästle. 1988. Reptile Egg-shells. SEM Atlas. Gustav Fischer Verlag; Stuttgart/New York.
Schlott, M. 1935. [Nachrichten aus Zoologischen Gärten] Breslau. Zool. Gart. N.F. (Leipzig) 8: 74-77.
Schmidt, K.P. 1927. Notes on Chinese reptiles. Bull. Amer. Mus. Nat. Hist. 54: 467-551.
Schmidt, K.P. 1929. The truth about snake stories. Sci. Amer. 141: 134-136.
Schuette, B. 1980. Two broad-headed skink nests. J. St. Louis Herpetol. Soc. 7(3-4): 13-14.
Schütte, G.W. 1970. Reptile incubation. Lammergeyer (11): 85.
Sclatter, P.L. 1862. Notes on the incubation of Python sebae, as observed in the Society's Gardens. Proc. Zool. Soc. London 1862: 365-368.

Semper, K. 1881. Animal Life as Affected by the Natural Conditions of Existence. D. Appleton and Company; New York.
Sengoku, S. 1979. [Amphibians and Reptiles.] [in Japanese]. Ienohikari Corporation; Tokyo.
Service, R. 1902. The adder in Solway. Ann. Scottish Nat. Hist. 44: 153-162.
Sharrell, R. 1966. The Tuatara, Lizards and Frogs of New Zealand. Collins; London.
Shaw, C.E. 1949. Notes on two broods of xantusiids. Herpetologica 5: 23-26.
Shaw, C.E. 1954. Captive-bred Cuban iguanas Cyclura macleayi macleayi. Herpetologica 10: 73-78.
Shaw, C.E. 1969. Breeding the rhinoceros iguana Cyclura cornuta cornuta at San Diego Zoo. Int. Zoo Yearb. 9: 45-48.
Shaw, G.E., and E.O. Shebbeare. 1931. The snakes of northern Bengal and Sikkim. Poisonous snakes. J. Darjeeling Nat. Hist. Soc. 5: 3-8.
Sheargold, T. 1979. Notes on the reproduction of Children's pythons (Liasis childreni) Gray 1842. Herpetofauna (Sydney) 10(2): 2-4.
Shine, R. 1980. "Costs" of reproduction in reptiles. Oecologia (Berlin) 46: 92-100.
Shine, R. 1985. The evolution of viviparity in reptiles: an ecological analysis. 15: 605-694. In G. Gans and F. Billet (eds), Biology of the Reptilia. Development B. John Wiley & Sons; New York.
Shine, R. 1988. Parental care in reptiles. 16: 275-329. In G. Gans and R.B. Huey (eds), Biology of the Reptilia. Ecology B. Defense and Life History. Alan R. Liss; New York.
Shine, R. 1989. Constraints, allometry, and adaptation: food habits and reproductive biology of Australian brownsnakes (Pseudonaja: Elapidae). Herpetologica 45: 195-207.
Shine, R., and J.J. Bull. 1979. The evolution of live-bearing in lizards and snakes. Amer. Nat. 113: 905-923.
Silver, R., H. Andrews, and G. F. Ball. 1985. Parental care in an ecological perspective: a quantitative analysis of avian subfamilies. Amer. Zool. 25: 823-840.
Simmon, E.S. 1944. The breeding habits of the cobra (Naia tripudians Merrem) and the green whipsnake (Dryophis mycterizans). J. Bombay Nat. Hist. Soc. 44: 480-481.
Skutch, A.F. 1957. The incubation patterns of birds. Ibis 99: 69-93.
Skutch, A.F. 1976. Parent Birds and Their Young. University of Texas Press; Austin, Texas.
Slavens, F.L. 1982. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1982. Frank L. Slavens; Seattle.
Slavens, F.L. 1983. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1983. Frank L. Slavens; Seattle.
Slavens, F.L. 1984. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1984. Frank L. Slavens; Seattle.
Slavens, F.L. 1985. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1985. Frank L. Slavens; Seattle.
Slavens, F.L. 1986. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1986. Frank L. Slavens; Seattle.
Slavens, F.L. 1987. Inventory of Live Reptiles and Amphibians in Captivity Current January 1, 1987. Frank L. Slavens; Seattle.
Slavens, F.L. 1988. Inventory, Longevity, & Breeding Notes--Reptiles and Amphibians in Captivity Current January 1, 1988. Frank L. Slavens; Seattle.

Slip, D.J. 1986. Ecology and thermal biology of the diamond python, Morelia spilota spilota. Unpublished Master's Thesis; University of Sydney.

Slip, D.J., and R. Shine. 1988a. The reproductive biology and mating system of diamond pythons, Morelia spilota (Serpentes: Boidae). Herpetologica 44: 396-404.

Slip, D.J., and R. Shine. 1988b. Reptilian endothermy: a field study of thermoregulation by brooding pythons. J. Zool. (London) 216: 367-378.

Smedley, N. 1931. Oviparity in a sea-snake, Laticauda colubrina (Schneid). Bull. Raffles Mus. (Singapore) (5): 54-59.

Smith, H.C. 1936. A hamadryad's (Naia bungarus) nest and eggs. J. Bombay Nat. Hist. Soc. 39: 186.

Smith, H.M. 1946. Handbook of Lizards. Lizards of the United States and Canada. Comstock Publishing Company; Ithaca and London.

Smith, H.M., and J.A. Slater. 1949. The southern races of Eumeces septentrionalis (Baird). Trans. Kansas Acad. Sci. 52: 438-448.

Smith, M.[A.] 1915. Notes on some snakes from Siam. J. Bombay Nat. Hist. Soc. 23: 784-789.

Smith, M.A. 1935. The Fauna of British India, Including Ceylon and Burma. Reptilia and Amphibia. Vol. II. -Sauria. Taylor and Francis; London.

Smith, M.[A.] 1937. Breeding habits of the Indian cobra. J. Siam Soc. Nat. Hist. Suppl. 11: 62-63.

Smith, M.A. 1943. The Fauna of British India Ceylon and Burma. Reptilia and Amphibia. Vol. III.-Serpentes. Taylor and Francis; London.

Smith, M.[A.] 1951. The British Amphibians & Reptiles. Collins; London.

Smith, P.W. 1961. The amphibians and reptiles of Illinois. Illinois Nat. Hist. Surv. Bull. 28: 1-298.

Snyder, D.H. 1972. Amphibians and Reptiles of Land Between the Lakes. Tennessee Valley Authority; [Knoxville].

Soderberg, P. 1973. On eleven Asian elapid snakes with specific reference to their occurrence in Thailand. Nat. Hist. Bull. Siam Soc. 24: 203-317.

Somma, L.A. 1985a. Notes on maternal behavior and post-brooding aggression in the prairie skink Eumeces septentrionalis. Nebraska Herpetol. Newsl. 6(4): 9-12.

Somma, L.A. 1985b. Brooding behavior in the northern prairie skink, Eumeces septentrionalis septentrionalis (Baird), and its relationship to the hydric environment of the nest substrate. Unpublished M.A. Thesis; University of Nebraska at Omaha, [Omaha].

Somma, L.A. 1985c. Egg brooding in the prairie skink, Eumeces septentrionalis, and its relationship to the hydric environment of the nest substrate. Soc. Stud. Amphib. Rept. -Herp. Leag. Meet. [Unpubl. Abst.] (Tampa, Florida) 1985: 78.

Somma, L.A. 1987a. Alloparental care in the prairie skink, Eumeces septentrionalis: a case of mistaken identity? Nebraska Herpetol. Newsl. 8(2): 5-8.

Somma, L.A. 1987b. Reproduction of the prairie skink, Eumeces septentrionalis, in Nebraska. Great Basin Nat. 47: 373-374.

Somma, L.A. 1987c. Maternal care of neonates in the prairie skink, Eumeces septentrionalis. Great Basin Nat. 47: 536-537.

Somma, L.A. 1988. Comments on the use of the term "brooding" to describe parental behaviour in squamate reptiles. Amphibia-Reptilia 9: 89-91.

Somma, L.A. 1989a. Oophagous behavior in brooding prairie skinks, Eumeces septentrionalis. Herpetol. Rev. 20: 3-4.

Somma, L.A. 1989b. The water vapor conductance of squamate reptilian eggs: the influence of scaling on nesting ecology. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [278].

Somma, L.A., and P.A. Cochran. 1989. Bibliography and subject index of the prairie skink, Eumeces septentrionalis (Baird) (Sauria: Scincidae). Great Basin Nat. 49: in press.
Somma, L.A., and J.D. Fawcett. 1985. An adaptive function for egg brooding in the prairie skink, Eumeces septentrionalis. Anim. Behav. Soc. [Unpubl. Meet.] Abst. (Raleigh, North Carolina) 1985: 71.
Somma, L.A., and J.D. Fawcett. 1989. Brooding behaviour of the prairie skink, Eumeces septentrionalis, and its relationship to the hydric environment of the nest. Zool. J. Linn. Soc. 95: 245-256.
Speck, F.G. 1921. The origin of the belief that snakes swallow their young for protection. Copeia (98): 51-54.
Speck, F.G. 1923. Snake folk-lore: the snake who swallows her young. J. Amer. Folk-lore 36: 298-300.
Spenser, E. 1590. The Faerie Qveene. William Ponfonbie; London.
Spotila, J.R., and M.P. O'Conner. 1989. Eggs as organisms--the difficulties of staying in one place. First World Congr. Herp. [Unpubl.] Abst. (Canterbury, United Kingdom) 1: [279].
Stafford, P.J. 1986. Pythons and Boas. T.F.H. Publications; Neptune City, New Jersey.
Stanley, C. [19??]. The Life and Adventures of the American Cow-boy. Clark Stanley Snake Oil Liniment Company; Providence, Rhode Island.
Steiner, T.M. 1986. Eumeces inexpectatus. Cat. Amer. Amphib. Rept. (385): 1-2.
Stemmler, O. 1969. Eine erfolgreiche Zucht von Kurzpythons (Python curtus brongersmai Stull 1938) im Terrarium. Aquar. Terrar. (Leipzig) 15: 156-161.
Stemmler-Morath, C. 1956. Beitrag zur Gefangenschafts- und Fortpflanzungsbiologie von Python molurus L. Zool. Gart. N.F. (Leipzig) 21: 347-364.
Stewart, J.R., and D. Duvall. 1985. Ovariectomy fails to block egg-brooding behavior in nesting, female five-lined skinks (Eumeces fasciatus). Copeia 1985: 777-779.
Strecker, J.K. 1908. Notes on the breeding habits of Phrynosoma cornutum and other Texas lizards. Proc. Biol. Soc. Washington 21: 165-170.
Street, D. 1979. The Reptiles of Northern and Central Europe. B. T. Batsford; London.
Strong, J. 1961. The Exhaustive Concordance of the Bible. Abingdon Press; New York/Nashville.
Sundowner. [=Tichborne, H. (sic?)] 1895. Snakes. European Mail; London.
Sundowner. [=Tichborne, H. (sic?)] 1902. The Tale of the Serpent. Chatto & Windus; London.
Sweeney, R.C.H. 1961. Snakes of Nyasaland. The Nyasaland Society and the Nyasaland Government; Zomba.
Switak, K.H. 1975. Der Grüne Baumpython aus dem Land der Menschenfresser. Aquar. Mag. 9: 366-372.

Tanner, W.W. 1943. Notes on the life history of Eumeces skiltonianus skiltonianus. Great Basin Nat. 4: 81-88.
Tanner, W.W. 1957. A taxonomic and ecological study of the western skink (Eumeces skiltonianus). Great Basin Nat. 17: 59-94.
Tanner, W.W. 1987. Lizards and turtles of western Chihuahua. Great Basin Nat. 47: 383-421.
Tarbet, S.A. 1984. Reproduction of D'albert's python, Liasis albertisi at the Oklahoma City Zoo. [7]:132-133. In P.J. Tolson (ed), 7th Annual

Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.
Taylor, E.H. 1932a. Eumeces inexpectatus: a new American lizard of the family Scincidae. Univ. Kansas Sci. Bull. 20: 251-261.
Taylor, E.H. 1932b. Eumeces laticeps: a neglected species of skink. Univ. Kansas Sci. Bull. 20: 263-271.
Taylor, E.H. 1935. A taxonomic study of the cosmopolitan scincoid lizards of the genus Eumeces with an account of the distribution and relationships of its species. Univ. Kansas Sci. Bull. 23: 1-643.
Taylor, E.H. 1956. A review of the lizards of Costa Rica. Univ. Kansas Sci. Bull. 38: 1-332.
Taylor, E.H. 1965. The serpents of Thailand and adjacent waters. Univ. Kansas Sci. Bull. 45: 609-1096.
Taylor, T. 1985. Eumeces callicephalus (mountain skink). Reproduction. Herpetol. Rev. 16: 27.
Telford, S.R., Jr. 1952. A herpetological survey in the vicinity of Lake Shipp, Polk County, Florida. Quart. J. Florida Acad. Sci. 15: 175-185.
Telford, S.R., Jr. 1959. A study of the sand skink, Neoseps reynoldsi Stejneger. Copeia 1959: 110-119.
Tho, Y.P., and S.Y. Ho. 1979. Observations on a batch of Gekko stentor eggs. Malayan Nat. J. 32: 265-269.
Thompson, M.B. 1988. Nesting behavior of tuatara, Sphenodon punctatus. Comb. Meet. Herp. Leag., Amer. Elasm. Soc., Early Life Hist. Sect. A.F.S., Soc. Stud. Amphib. Rept., Amer. Soc. Ichth. Herp. [Unpubl.] Abst. Prog. (Ann Arbor, Michigan) 1988: 182.
Tinkle, D.W. 1959. Observations of reptiles and amphibians in a Louisiana swamp. Amer. Midl. Nat. 62: 189-205.
Tinkle, D.W., and J.W. Gibbons. 1977. The distribution and evolution of viviparity in reptiles. Misc. Publ. Mus. Zool. Univ. Michigan (154): 1-55.
Topsell, E. 1608. The Historie of Serpents. Or, the Second Booke of Liuing Creatures. William Taggard; London.
Townson, S. 1980. Observations on the reproduction of the Indian python in captivity, with special reference to the interbreeding of the two subspecies, Python molurus molurus and Python molurus bivittatus. Pp. 69-80. In S. Townson, N.J. Millichamp, D.G.D. Lucas and A.J. Millwood (eds), The Care and Breeding of Captive Reptiles. British Herpetological Society; [London].
Townson, S. [1989]. A captive Burmese python incubating eggs. British Herpetological Society. [Unpubl. pamphlet]. [p. 3, photo].
Townson, S. 1985. The captive reproduction and growth of the yellow anaconda (Eunectes notaeus). Pp. 33-43. In S. Townson and K. Lawrence (eds), Reptiles: Breeding, Behaviour and Veterinary Aspects. British Herpetological Society; London.
Townson, S., and S. Todd. 1976. Captive breeding of the Indian python Python molurus bivittatus. Brit. Herpetol. Soc. Newsl. 14: 25-26.
Toyama, M. 1975. On the embryos obtained from eggs of Eumeces oshimensis. Japan. J. Herp. 6: 39-42.
Trutnau, L. 1980. Über die Lebensweise und Pflege des Netzpythons Python reticulatus (Schneider). Herpetofauna (Weinstadt) (4): 26-31.
Trutnau, L. 1986. Nonvenomous Snakes. English Language Edition. Barron's Educational Series; Woodbury, New York.
Trillmich, K. 1979. Feeding behaviour and social behaviour of the marine iguana. Noticias Galápagos 29: 17-20.

Tryon, B.W. 1979. Reproduction in captive forest cobras, Naja melanoleuca (Serpentes: Elapidae). J. Herp. 13: 499-504.

Tryon, B.[W.] 1985. First Papuan python hatching reported. AAZPA Newsl. 26(3): 17.

Tryon, B.W., and J. Whitehead. 1988. Reproduction in a little-known New Guinea python, Liasis papuanus (Peters and Doria). Zoo Biol. 7:371-379.

Tweedie, M.W.F. 1954. The Snakes of Malaya. Government Printing Office; Singapore.

Tytle, T., S. Wheeler, and D. Grow. 1987. Ptychozoon lionatum (gliding gecko). Egg guarding. Herpetol. Rev. 18: 36.

Valenciennes, [A.] 1841a. Observations faites pendant l'incubation d'une femelle du python à deux raies (Python bivittatus, Kuhl.) pendant les mois de mai et de juin 1841. Compt. Rend. Hebd. Séan. Acad. Sci. Paris 13: 126-133.

Valenciennes, [A.] 1841b. Observations faites pendand l'incubation d'une femelle du python à deux raies (Python bivitattus, Kuhl.) pendant les mois de mai et de juin 1841. Ann. Sci. Nat., 2nd Ser. (Paris) 16: 65-72.

Van Denburgh, J. 1922. The Reptiles of Western North America. Volume I. Lizards. Occ. Pap. California Acad. Sci. 10: 1-611.

Van Devender, T.R., and W. Van Devender. 1975. Ecological notes on two Mexican skinks (genus Eumeces). Southwest Nat. 20: 279-282.

Van Mierop, L.H.S., and S.M. Barnard. 1976a. Thermoregulation in a brooding female Python molurus bivittatus (Serpentes: Boidae). Copeia 1976: 398-401.

Van Mierop, L.H.S., and S.M. Barnard. 1976b. Observations on the reproduction of Python molurus bivittatus. J. Herp. 10: 333-340.

Van Mierop, L.H.S., and S.M. Barnard. 1978. Further observations on thermoregulation in brooding female Python molurus bivittatus (Serpentes: Boidae). Copeia 1978: 615-621.

Van Mierop, L.H.S., and E.L. Bessette. 1981. Reproduction of the ball python, Python regius, in captivity. Herpetol. Rev. 12: 20-22.

Van Mierop, L.H.S., T. Walsh, and D.L. Marcellini. 1983. Reproduction of Chondropython viridis (Reptilia, Serpentes, Boidae). [6]:265-274. In D.L. Marcellini (ed), 6th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Villiard, P. 1969. Reptiles as Pets. Doubleday & Company; Garden City.

Vinegar, A. 1968. Brooding of the eastern glass lizard, Ophisaurus ventralis. Bull. South. California Acad. Sci. 67: 65-68.

Vinegar, A. 1973. The effects of temperature on the growth and development of embryos of the Indian python, Python molurus (Reptilia: Serpentes: Boidae). Copeia 1973: 171-173.

Vinegar, A. 1974. Evolutionary implications of temperature induced anomalies of development in snake embryos. Herpetologica 30: 72-74.

Vinegar, A., V.H. Hutchison, and H.G. Dowling. 1970. Metabolism, energetics, and thermoregulation during brooding of snakes of the genus Python (Reptilia, Boidae). Zoologica 55: 19-48.

Visser, J. 1971. Unusually large skaapsteker eggs from the Cape peninsula. J. Herpetol. Assoc. Africa (7): 9.

Vitt, L.J., and W.E. Cooper, Jr. 1985a. The relationship between reproduction and lipid cycling in the skink Eumeces laticeps with comments on brooding ecology. Herpetologica 41: 419-432.

Vitt, L.J., and W.E. Cooper, Jr. 1985b. The evolution of sexual dimorphism in the skink Eumeces laticeps: an example of sexual selection. Canad. J. Zool. 63: 995-1002.

Vitt, L.J., and W.E. Cooper, Jr. 1986. Skink reproduction and sexual dimorphism: Eumeces fasciatus in the southeastern United States, with notes on Eumeces inexpectatus. J. Herp. 20: 65-76.
Vitt, L.J., and W.E. Cooper, Jr. 1989. Maternal care in skinks (Sauria: Eumeces). J. Herp. 23: 29-34.
Vogel, Z. [1958?]. Reptile Life. Spring Books; London.
Vogel, Z. 1964. Reptiles and Amphibians. Their Care and Behaviour. English Language Edition. Studio Vista; London.
Vogt, R.C. 1981. Natural History of Amphibians and Reptiles in Wisconsin. Milwaukee Public Museum; Milwaukee.

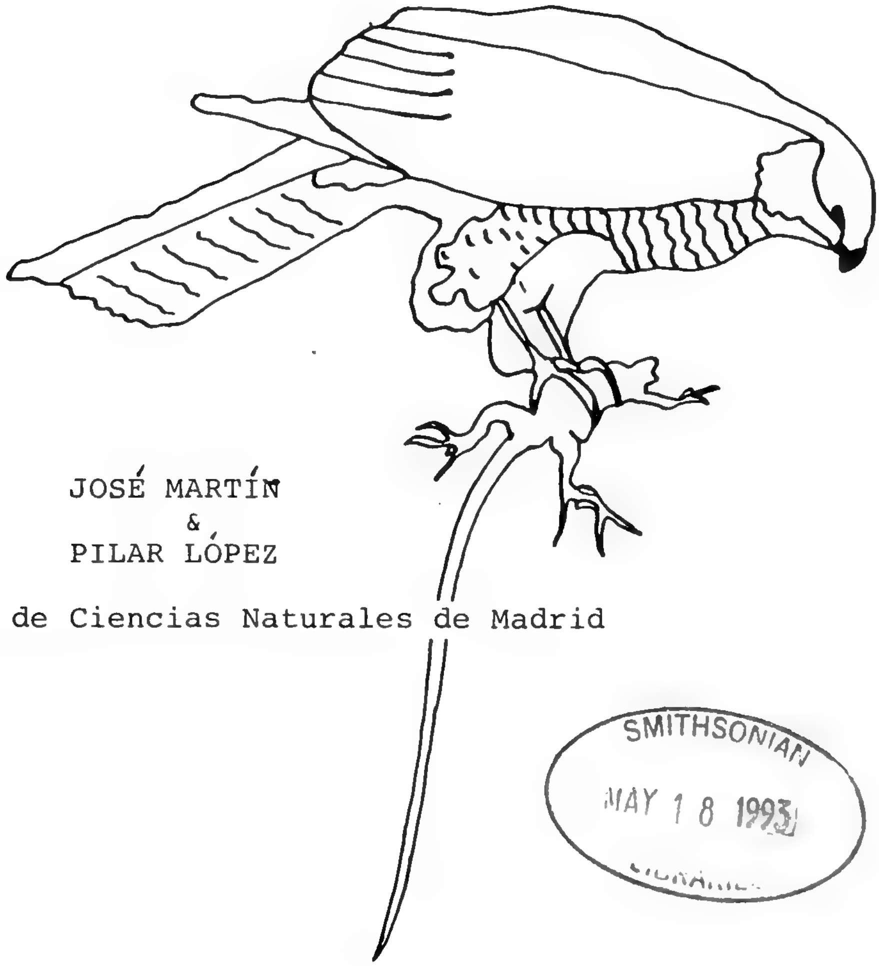
Wagner, E.P. 1973. Breeding Python molurus bivittatus. HISS News-J. 1: 113.
Wagner, E.[P.] 1976. Breeding the Burmese python Python molurus bivittatus at Seattle Zoo. Int. Zoo Yearb. 16: 83-85.
Waitkus, D. 1983. Reproductive behavior of Ptychozoon lionatum at the Reptile Breeding Foundation. Notes NOAH 11(3): 16.
Wall, F. 1907. Hatching of the dhaman (Zamensis mucosus) eggs, and observations on the egg tooth. J. Bombay Nat. Hist. Soc. 17: 1033-1035.
Wall, F. 1908. Notes on the incubation and brood of the Indo-Burmese snake-lizard or slow worm (Ophisaurus gracilis). J. Bombay Nat. Hist. Soc. 18: 503-504.
Wall, F. 1911. A popular treatise on the common Indian snakes [part XIV with plate XIV]. J. Bombay Nat. Hist. Soc. 20: 603-633.
Wall, F. 1912. A popular treatise on the common Indian snakes [part XVII with plate XVII]. J. Bombay Nat. Hist. Soc. 21: 447-475.
Wall, F. 1921. Ophidia Taprobanica or the Snakes of Ceylon. H. R. Cottle, Government Printer; Colombo.
Wall, F. 1924. The hamadryad or king cobra, Naia hannah (Cantor). J. Bombay Nat. Hist. Soc. 30: 189-195.
Walsh, T. 1977. Husbandry and breeding of Chondropython viridis. Natl. Assoc. Sound Wildlife Prog. 1(2): 10-22.
Walsh, T. [1980]. Further notes on the husbandry, breeding, and behavior of Chondropython viridis. [3]:102-111. In R.A. Hahn (ed), 3rd Annual Reptile Symposium on Captive Propagation and Husbandry. [Zoological Consortium]; Thurmont, Maryland.
Walsh, T., and B. Davis. 1984. Husbandry and breeding of the Brazilian rainbow boa Epicrates cenchira at the National Zoological Park. [7]:108-114. In P.J. Tolson (ed), 7th Annual Reptile Symposium on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.
[Wang, B.] 1966. [Studies on the ecology of four species of lizards in Hangchow. II. Breeding.] [in Chinese]. Acta Zool. Sinica 19: 170-186.
Wasey, G.K. 1892. A nest of king cobra's eggs. J. Bombay Nat. Hist. Soc. 7: 257.
Wehekind, L. 1960. Trinidad snakes. J. British Guiana Mus. Zoo Royal Agr. Commer. Soc. (27): 71-76.
Wells, E. 1981. A diurnal variation's effect on a captive breeding of Boa constrictor constrictor. [4]:11-16. In R.A. Hahn (ed), 4th Annual Reptile Symposium on Captive Propagation & Husbandry. Zoological Consortium; Thurmont, Maryland.
Wells, K.D. 1981. Parental behavior of male and female frogs. Pp. 184-197. In R.D. Alexander and D.W. Tinkle (eds), Natural Selection and Social Behavior. Recent Research and New Theory. Chiron Press; New York.
Welty, J.C. 1982. The Life of Birds. Third Edition. CBS College Publishing; Philadelphia/New York.

Wendt, H. 1965. The Sex Life of the Animals. English Translation. Simon and Schuster; New York.
Werler, J.E. 1951. Miscellaneous notes on the eggs and young of Texan and Mexican reptiles. Zoologica 36: 37-48.
Werner, D.I. 1982. Social organization and ecology of land iguanas, Conolophus subcristatus, on Isla Fernandina, Galápagos. Pp. 342-365. In G.M. Burghardt and A.S. Rand (eds), Iguanas of the World. Their Behavior, Ecology, and Conservation. Noyes Publications; Park Ridge, New Jersey.
Wexo, J.B. 1987. Snakes. ZOOBOOKS 4(10): 1-16.
Wharton, C.H. 1960. Birth and behavior of a brood of cottonmouths, Agkistrodon piscivorus piscivorus, with notes on tail-luring. Herpetologica 16: 125-129.
Wharton, C.H. 1966. Reproduction and growth in the cottonmouth, Agkistrodon piscivorus Lacépède, of Cedar Keys, Florida. Copeia 1966: 149-161.
Whitaker, R. 1977. Two reptile nests. Hornbill 1977 (April-June): 7-12.
Whitaker, R. 1978. Common Indian Snakes. Macmillan India; Dehli.
Whitaker, Z., and R. Whitaker. 1986. The Snakes Around Us. Director, National Book Trust; New Dehli.
White, G. 1789. The Natural History and Antiquities of Selborne, in the County of Southampton. B. White and Son; London.
White, T.H. 1954. The Bestiary. A Book of Beasts. G. P. Putnam's Sons; New York.
Whitfield, P. 1983. Reptiles and Amphibians. Longman Group; Essex.
Wiewandt, T.A. 1977. Ecology, behavior, and management of the Mona Island ground iguana, Cyclura stejnegeri. Unpublished Ph.D. Dissertation; Cornell University, [Ithaca].
Wiewandt, T.A. 1979. La gran iguana de Mona. Nat. Hist. 88(10): 56-65.
Wiewandt, T.A. 1982. Evolution of nesting patterns of iguanine lizards. Pp. 119-141. In G.M. Burghardt and A.S. Rand (eds), Iguanas of the World. Their Behavior, Ecology, and Conservation. Noyes Publications; Park Ridge, New Jersey.
Williams, G.C. 1966. Adaptation and Natural Selection. A Critique of Some Current Evolutionary Thought. Princeton University Press; Princeton.
Williamson, M.A. 1986. Trail of the Snake. From Big Bend to Baja. Sunstone Press; Santa Fe, New Mexico.
Wittenberger, J.F. 1981. Animal Social Behavior. Duxbury Press; Boston.
Woodbury, A.M. 1931. A descriptive catalog of the reptiles of Utah. Bull. Univ. Utah 21(5); Biol. Ser. 1(4): 1-129.
Woodward, S.F. 1933. A few notes on the persistance of active spermatozoa in the African night-adder, Causus rhombeatus. Proc. Zool. Soc. London 1933: 189-190.
Wray, G.O. 1862. [Extract of a letter from Wray, G.O.] Proc. Zool. Soc. London 1862: 107-108.
Wright, A.H., and A.A. Wright. 1957. Handbook of Snakes of the United States and Canada. Vols. I & II. Comstock Publishing Company; Ithaca and London.

Yadav, R.N. 1967. A note on the breeding of Indian pythons Python molurus at Jaipur Zoo. Int. Zoo Yearb. 7: 182-183.
Yahya, H.S.A. 1985. Observations on the banded krait, Bungarus fasciatus. J. Bombay Nat. Hist. Soc. 82: 219.
York, D.S., and G.M. Burghardt. 1988. Brooding in the Malayan pit viper, Calloselasma rhodostoma: temperature, relative humidity, and defensive behaviour. Herpetol. J. 6: 210-214.

Zaworski, J.P. 1987a. Egg molding behavior by male Gekko gecko and Gekko petricolus. Bull. Chicago Herpetol. Soc. 22: 77.
Zaworski, J.P. 1987b. The captive maintenance and propagation of Gekko petricolus Taylor. Bull. Chicago Herpetol. Soc. 22: 129-130.
Zaworski, J.P. 1987c. Egg guarding behavior by a male Gekko gecko. Bull. Chicago Herpetol. Soc. 22: 193.
Zaworski, J.P. 1988. Captive husbandry of the tokay, Gekko gecko Linnaeus. Bull. Chicago Herpetol. Soc. 23: 104-105.
Zimmermann, E. 1986. Breeding Terrarium Animals. English-language Edition. T.F.H. Publications; Neptune City, New Jersey.
Zulich, A.W. 1983. Notes on the maternal incubation of Chondropython viridis eggs. J. North. Ohio Herpetol. Soc. 9(1): 13-21.
Zulich, A.W. 1985. Captive breeding, husbandry, and neonatal care of the green tree python Chondropython viridis with emphasis on maternal incubation of eggs. [8]:114-118. In S. McKeown and F. Caporaso (eds), 8th Annual International Herpetological Symposium on Captive Propagation & Husbandry. Zoological Consortium; Thurmont, Maryland.
Zweifel, R.G. 1962. Notes on the distribution and reproduction of the lizard Eumeces callicephalus. Herpetologica 18: 63-65.

AMPHIBIANS AND REPTILES AS PREY OF BIRDS IN SOUTHWESTERN EUROPE



JOSÉ MARTÍN
&
PILAR LÓPEZ

Museo Nacional de Ciencias Naturales de Madrid

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 82

1990

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with the Division of Amphibians and Reptiles.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions on preparation and submission. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC 20560 USA. Please include a self-addressed mailing label with requests.

INTRODUCTION

This review surveys species of amphibians and reptiles that are reported prey of birds in southwestern Europe. These ectothermic animals are important in Mediterranean and temperate ecosystems, because they are the prey for many specialist birds (eg, the short-toed eagle, Circaetus gallicus, a snake eater). However, European herpetologists know the identity of few amphibian and reptilian predators. In the recently published "Handbuch der Reptilien und Amphibien Europas", references to predation are scarce and even ignored. However, the ornithological literature contains numerous papers on bird diets, and amphibians and reptiles are frequently cited as bird preys.

The Cramp's "Handbook of Birds of the Western Paleartic" was the first book examined; however, most of the predation records were obtained from the main European ornithological journals from Southwestern Europe. Including the Iberian Peninsula (Spain and Portugal), France, Belgium, The Netherlands, and the British Isles -approximately between 10°W and 10°E longitude.

References are listed and numbered alphabetically and can be accessed through either predator or prey. Species are listed systematically.

All scientific names have been updated. Some report provide only general identifications i.e., frog, toad, lizard or snake. In such cases, we have tried to identify the prey precisely as possible. We had problems with the "green frog" group, which includes Rana ridibunda, R. perezi, R. lessonae, and R. esculenta. Since these species are taxonomically complex, we cited them here as green frogs. The same identification problems occurred with the genera Discoglossus, Hyla, and Podarcis.

The number of references is not a good index for predation rate, it only means that one species is more frequently cited. Although some preys occur only occasionally in bird diet, other species apparently experience heavy predation. This aspect is often ignored in ecological studies.

Please remembered that this survey was limited to regional journals and books and complete only for 1950 through 1988 for these. The journals are: Belgium (Le Gerfaut), France (Acta Biologica Montana, Alauda, Aves, Le Biévre, Le Cormoran, L'Oiseau et la Revue Francaise

d'Ornithologie, Nos Oiseaux), Great Britain (Bird Study, British Birds, The Ibis, Scottish Birds), Portugal (Cyanopica), Spain (Alytes, Ardeola, Boletín de la Estación Central de Ecología, Boletin de la Real Sociedad de Historia Natural, Cuadernos de Ciencias Biológicas, Doñana Acta Vertebrata, Mediterránea, Miscellanea Zoologica, Monografías del I.C.O.N.A., Munibe, Naturalia Hispanica, Publicaciones del Centro Pirenaico de Biología Experimental).

Acknowledgments: The Sociedad Española de Ornitología library allowed access to these journals. E. Moreno helped us with the English translation.

BIRDS THAT EAT AMPHIBIANS AND REPTILES

PREDATOR	PREY	REFERENCES
GAVIIFORMES		
GAVIA ARCTICA		
	Rana sp.	49
PODICIPEDIFORMES		
TACHYBAPTUS RUFICOLLIS		
	Amphibia	49
	Triturus alpestris	171
PODICEPS CRISTATUS		
	Natrix natrix	49
PELECANIFORMES		
PHALACROCORAX CARBO		
	Rana temporaria	49, 158
CICONIIFORMES		
ARDEIDAE		
	Anura	96, 151
	"Green frogs"	190
	Tarentola mauritanica	153
	Lacertidae	153
BOTAURUS STELLARIS		
	Triturus sp.	49
	Anura	49
	Rana sp.	49
	"Green frogs"	49, 98
	Natrix natrix	49
IXOBRYCHUS MINUTUS		
	Amphibia	49
	"Green frogs"	49
NYCTICORAX NYCTICORAX		
	Pleurodeles waltl	190
	Triturus sp.	49
	Anura	189, 202
	Pelobates cultripes	19, 189, 190, 191
	Rana sp.	49, 189
	"Green frogs"	49, 189, 202
	Lacertidae	49, 189
	Natrix sp.	189
	Natrix maura	190
	Natrix natrix	49
ARDEOLA RALLOIDES		
	Triturus cristatus	189
	Pelobates cultripes	191
	Hyla arborea	49, 190
	Rana sp.	49, 100, 189
	"Green frogs"	49
	Lacertidae	49, 189

BULBUCUS IBIS		
	Amphibia	138
	Pleurodeles waltl	138
	Hyla arborea	19, 191
	Rana sp.	19, 49
	"Green frogs"	19, 110, 138, 166
	Reptilia	138
	Tarentola mauritanica	49, 110
	Chalcides chalcides	49, 110, 138, 190
	Lacertidae	19
	Acanthodactylus erythrurus	138, 189, 191
	Lacerta lepida	138
	Podarcis hispanica	166
	Psammodromus sp.	189
	Psammodromus algirus	49, 110, 138
	Psammodromus hispanicus	138
	Natrix natrix	166
EGRETTA GARZETTA		
	Caudata	202
	Triturus helveticus	189
	Anura	38, 202
	Pelobates cultripes	49, 189, 202
	Hyla arborea	49, 189, 190
	Rana sp.	49, 100, 189
	"Green frogs"	19, 189, 202
	Reptilia	202
	Lacertidae	49
ARDEA CINEREA		
	Triturus sp.	149
	Pelobates cultripes	49
	Pelobates fuscus	49
	Bufo bufo	90
	Rana sp.	49, 96, 189
	Rana temporaria	149
	Lacertidae	49
	Lacerta viridis	144
	Natrix maura	144
	Natrix natrix	49, 144
ARDEA PURPUREA		
	Pleurodeles waltl	2
	Triturus sp.	49
	Pelobates cultripes	2, 49
	Rana sp.	49
	Lacertidae	49
	Natrix sp.	49
	Natrix maura	2, 162, 190, 191
	Natrix natrix	23
CICONIA CICONIA		
	Caudata	164
	Pleurodeles waltl	124
	Discoglossus sp.	49, 124
	Pelobates cultripes	124
	Bufo sp.	49, 164

	Bufo bufo	186
	Rana sp.	45, 49, 150, 164
	"Green frogs"	49, 124
	Rana temporaria	49, 79
	Emydidae	124
	Mauremys caspica	49
	Anguis fragilis	49, 150
	Chalcides sp.	124
	Lacertidae	45, 49, 124, 150 164
	Lacerta lepida	124
	Lacerta schreiberi	142
	Podarcis hispanica	124
	Psammodromus algirus	124
	Colubridae	124, 164
	Coronella sp.	49
	Coronella austriaca	150
	Natrix sp.	124
	Natrix natrix	49, 150
	Vipera sp.	30, 150
CICONIA NIGRA		
	Urodela	49
	Plaurodeles waltl	71, 87
	Triturus marmoratus	71
	Discoglossus sp.	71
	Pelobates cultripes	71, 87
	Bufo sp.	71
	Rana sp.	49
	"Green frogs"	71
	Lacertidae	49
	Lacerta lepida	71
	Colubridae	49
	Natrix maura	71

ANSERIFORMES

CYGNUS OLOR		
	Bufo sp.	49
	Rana sp.	49
ANAS PLATYRHYNCHOS		
	Amphibia	49
ANAS STREPERA		
	Amphibia	49
ANAS ACUTA		
	Amphibia	49
ANAS CLYPEATA		
	Amphibia	49
NETTA RUFINA		
	Amphibia	49
AYTHYA FERINA		
	Rana sp.	49
MERGUS ALBELLUS		
	Rana sp.	49

MERGUS MERGANSER		
	Rana sp.	74
FALCONIFORMES		
ELANUS CAERULEUS		
	Rana sp.	50, 177, 178
	Lacerta lepida	106
PERNIS APIVORUS		
	Bufo bufo	50
	Hyla arborea	37, 50
	Rana sp.	77
	"Green frogs"	22, 50, 85
	Rana temporaria	50
	Anguis fragilis	50
	Lacertidae	50
	Lacerta lepida	37, 50, 77
	Lacerta schreiberi	37, 50
	Lacerta viridis	77
	Elaphe longissima	50
	Natrix sp.	50
	Natrix natrix	22, 50
MILVUS MILVUS		
	Caudata	190, 191
	Pleurodeles waltl	65
	Triturus marmoratus	190
	Pelobates cultripes	50, 86
	Bufo sp.	50
	Bufo bufo	50, 65, 86, 203
	Bufo calamita	86
	Rana sp.	50
	"Green frogs"	86
	Rana temporaria	50, 58, 203
	Testudo graeca	65
	Blanus cinereus	65
	Anguis fragilis	50, 86, 203
	Chalcides bedriagai	25
	Lacertidae	25, 50
	Lacerta lepida	7, 25, 50, 65, 85, 86, 154, 190, 191
	Podarcis hispanica	25
	Psammodromus sp.	50
	Psammodromus algirus	25
	Psammodromus hispanicus	86
	Colubridae	25, 190, 191
	Elaphe scalaris	50, 65, 86
	Macroprotodon cucullatus	50, 86
	Malpolon monspessulanus	50, 65, 85, 86
	Natrix sp.	50
	Natrix maura	25, 65, 86, 191
	Natrix natrix	65, 86
MILVUS MIGRANS		
	Pleurodeles waltl	50, 61, 190

	Pelobates cultripes	11, 18, 50, 61, 80, 86, 190, 191
	Bufo sp.	50
	Bufo bufo	5, 7, 80, 86
	Rana sp.	50
	"Green frogs"	61, 80, 191
	Mauremys caspica	61, 80
	Lacertidae	50
	Lacerta lepida	9, 11, 50, 61, 80, 85, 86, 152, 154, 190, 191
	Colubridae	191
	Coronella girondica	11
	Elaphe scalaris	80
	Malpolon monspessulanus	85, 190, 191
	Natrix sp.	50
	Natrix maura	61, 80, 190, 191
	Natrix natrix	80
ACCIPITER GENTILIS		
	Amphibia	75
	Lacertidae	85
	Lacerta lepida	6, 7, 85, 86, 143
	Psammodromus algirus	6
ACCIPITER NISUS		
	Lacertidae	50
BUTEO BUTEO		
	Amphibia	185
	Salamandra salamandra	33
	Pleurodeles waltl	191
	Anura	33, 131
	Discoglossus sp.	33
	Pelobates cultripes	50, 86
	Bufo sp.	50
	Bufo bufo	5, 33, 77, 85, 86
	Bufo calamita	86
	Rana sp.	50
	"Green frogs"	21, 86, 191
	Rana temporaria	134
	Blanus cinereus	86, 191
	Gekkonidae	97
	Anguis fragilis	33, 50, 131
	Lacertidae	33, 50, 185
	Acanthodactylus erythrurus	89
	Lacerta lepida	6, 7, 18, 33, 85, 86, 97, 143, 154, 191, 197
	Lacerta schreiberi	7
	Podarcis sp.	33
	Podarcis hispanica	191
	Podarcis muralis	33
	Psammodromus sp.	89
	Psammodromus algirus	6
	Psammodromus hispanicus	86

	Colubridae	6, 7, 86, 97, 185
	Coluber hippocrepis	85, 86
	Coronella girondica	6, 33
	Elaphe scalaris	50, 86, 154
	Malpolon monspessulanus	6, 33, 86
	Natrix maura	85, 97, 191
	Natrix natrix	24, 50, 97
	Vipera sp.	50
HIERAETUS PENNATUS		
	Bufo bufo	5
	Lacerta lepida	7, 12, 18, 50, 85, 86, 119, 145, 154, 191, 197
HIERAETUS FASCIATUS		
	Bufo bufo	173
	Lacertidae	50, 173
	Lacerta lepida	6, 8, 28, 41, 50, 55, 84, 123, 159, 173, 195
	Lacerta viridis	28, 41, 173, 195
	Colubridae	41
	Malpolon monspessulanus	6, 123
AQUILA HELIACA		
	Reptilia	62
	Testudo graeca	50
	Lacerta lepida	50, 62, 86, 190, 191
	Colubridae	190, 191
	Coluber hippocrepis	62
	Elaphe scalaris	50, 62
	Malpolon monspessulanus	50, 62, 190, 191
	Natrix maura	62
AQUILA CHRYSAETOS		
	Amphibia	43, 44
	Reptilia	43, 64, 107
	Testudo sp.	50
	Testudo graeca	64
	Lacertidae	50, 182
	Lacerta lepida	18, 64, 77, 78, 86, 123
	Lacerta viridis	13
	Colubridae	13, 43, 44, 64, 78, 123, 182
	Elaphe scalaris	18, 138
	Malpolon monspessulanus	64
	Vipera sp.	50
NEOPHRON PERCNOPTERUS		
	Amphibia	181
	Pleurodeles waltl	17, 86
	Pelobates cultripes	191
	Bufo sp.	50, 73
	Rana sp.	50
	Reptilia	181

	Testudines	50
	Testudo sp.	17
	Emys orbicularis	17
	Mauremys caspica	17, 86, 154
	Lacertidae	50
	Lacerta lepida	6, 17, 50, 73, 85, 86, 127, 154 163
	Lacerta viridis	50
	Colubridae	6, 17, 50
	Elaphe scalaris	17, 73, 127
	Malpolon monspessulanus	17, 50, 73, 85, 127, 163
	Natrix maura	17, 154
	Natrix natrix	17, 86, 127
GYPAETUS BARBATUS		
	Testudo sp.	50, 113
	Testudo graeca	50
	Testudo hermanni	50
	Lacerta lepida	113
	Colubridae	113
AEGYPIUS MONACHUS		
	Testudines	50
	Testudo sp.	50
	Lacertidae	50
	Lacerta lepida	111
	Psammodromus algirus	111
	Malpolon monspessulanus	111
CIRCAETUS GALLICUS		
	Amphibia	183
	Pelobates cultripes	50, 86
	Bufo bufo	4, 5, 50
	Bufo viridis	50
	Rana sp.	4
	"Green frogs"	50
	Anguis fragilis	42, 50, 183
	Chalcides chalcides	86
	Lacertidae	4
	Lacerta agilis	50
	Lacerta lepida	4, 18, 50, 86, 120, 183, 190, 191, 197
	Lacerta viridis	42, 50, 183
	Podarcis muralis	183
	Psammodromus algirus	4, 86
	Colubridae	197
	Coluber hippocrepis	4, 86
	Coluber viridiflavus	50, 183
	Coronella sp.	183
	Coronella austriaca	50, 86
	Coronella girondica	4

	Elaphe longissima	42, 50, 183
	Elaphe scalaris	4, 6, 86, 120, 152, 154, 190, 191
	Malpolon monspessulanus	4, 50, 85, 86, 120, 183, 190, 191
	Natrix sp.	18
	Natrix maura	4, 50, 183, 190, 191
	Natrix natrix	4, 42, 50, 183
	Vipera aspis	42, 50
	Vipera latastei	4
	Vipera berus	50
CIRCUS CYANEUS		
	Lacertide	169
	Lacerta vivipara	157
CIRCUS PYGARGUS		
	Anura	169
	Bufo bufo	50
	Rana sp.	155
	"Green frogs"	50
	Rana temporaria	50
	Reptilia	114
	Blanus cinereus	114
	Tarentola mauritanica	86
	Chalcides bedriagai	114
	Chalcides chalcides	114, 154
	Lacertidae	18, 114, 155, 169
	Acanthodactylus erythrurus	154, 191
	Lacerta lepida	114, 154, 155
	Psammodromus algirus	50, 114
	Psammodromus hispanicus	86
	Colubridae	18, 114
	Natrix natrix	50
	Vipera berus	50
CIRCUS AERUGINOSUS		
	Amphibia	185
	Anura	169
	Rana sp.	50
	"Green frogs"	190
	Lacertidae	169
	Colubridae	169
	Natrix maura	50
	Natrix natrix	50
FALCO PEREGRINUS		
	Bufo sp.	50
	Rana sp.	50
	Lacertidae	50
	Lacerta viridis	165

FALCO SUBBUTEO		
	Reptilia	50
FALCO ELEONORAE		
	Lacertidae	50
	Podarcis lilfordi	10, 167
FALCO COLUMBARIUS		
	Rana temporaria	160
	Lacerta vivipara	20
FALCO NAUMANNI		
	Pelodytes punctatus	50, 83
	Blanus cinereus	50, 82, 83
	Tarentola mauritanica	50, 82, 191
	Chalcides sp.	50, 83
	Chalcides chalcides	82, 83
	Lacertidae	18, 26, 83
	Lacerta lepida	50, 82, 83
	Podarcis hispanica	50, 83
	Psammodromus sp.	18, 50, 85
	Psammodromus algirus	82, 83
	Psammodromus hispanicus	83
	Malpolon monspessulanus	82
	Natrix maura	50, 83
FALCO TINNUNCULUS		
	Amphibia	185
	Anura	29, 191
	Rana temporaria	50, 59, 188, 200
	Reptilia	180
	Blanus cinereus	191
	Anguis fragilis	50, 59, 77
	Lacertidae	6, 7, 29, 77, 85, 172, 185
	Acanthodactylus erythrurus	85, 191
	Lacerta lepida	7, 18, 191
	Lacerta vivipara	50, 59, 200, 205
	Podarcis hispanica	148, 191
	Psammodromus algirus	6, 18, 191
	Psammodromus hispanicus	6, 191
	Colubridae	77, 185

GALLIFORMES

PHASIANUS COLCHICUS		
	Rana sp.	50
	Lacerta agilis	50
	Natrix natrix	50
	Vipera berus	50
GALLUS GALLUS		
	Salamandra salamandra	116

GRUIFROMES

GRUS GRUS		
	Rana sp.	50
	Anguis fragilis	50
	Lacertidae	50

	Colubridae	50
RALLUS AQUATICUS		
	Triturus sp.	50
	Bufo sp.	50
	Rana sp.	50
PORZANA PUSILLA		
	Lacertidae	50
GALLINULA CHLOROPUS		
	Amphibia	50
PORPHYRIO PORPHYRIO		
	Natrix maura	50
FULICA ATRA		
	Rana sp.	50
OTIS TARDA		
	Rana sp.	50
	Lacertidae	50
OTIS TETRAX		
	Rana sp.	50

CHARADRIIFORMES

SCOLOPAX RUSTICOLA		
	Chalcides chalcides	60
HIMANTOPUS HIMANTOPUS		
	Amphibia	51
	Pleurodeles waltl	199
BURHINUS OEDICNEMUS		
	Amphibia	1, 51
	Pelobates fuscus	51
	Psammodromus algirus	191
	Colubridae	191
TRINGA NEBULARIA		
	Rana sp.	179
LARUS RIDIBUNDUS		
	Pelobates cultripes	51
	Reptilia	51
LARUS CANUS		
	Rana temporaria	161
LARUS ARGENTATUS		
	Amphibia	51
	Bufo bufo	103
	Rana temporaria	103
	Reptilia	51
	Lacertidae	132
	Vipera berus	130
LARUS MARINUS		
	Bufo bufo	103
	Rana temporaria	103
CHLIDONIAS HYBRIDA		
	Rana sp.	190
GELOCHELIDON NILOTICA		
	Pelobates cultripes	48, 192, 193
	"Green frogs"	48, 126
	Lacerta lepida	193

CUCULIFORMES

CLAMATOR GLANDARIUS		
	Lacertidae	52
CUCULUS CANORUS		
	Bufo bufo	140
	Rana temporaria	140

STRIGIFORMES

TYTO ALBA		
	Amphibia	3, 32, 34, 76, 95, 176
	Anura	31, 57
	Discoglossus sp.	32, 47, 52, 196
	Pelobates cultripes	32, 36, 52, 108, 129, 137, 152, 190, 191
	Pelodytes punctatus	52, 108, 137
	Bufo bufo	52, 92, 185
	Rana sp.	15, 32, 95
	Rana dalmatina	52
	"Green frogs"	35, 36, 47, 52, 95, 108, 137, 185
	Rana temporaria	52, 66, 92, 174, 185, 204
	Reptilia	176
	Chamaeleo chamaeleon	52
	Hemidactylus turcicus	137, 198
	Tarentola mauritanica	52, 137, 146, 194, 198
	Anguis fragilis	52
	Lacertidae	32, 57, 76, 92, 185
	Acanthodactylus erythrurus	35, 52, 190, 191
	Lacerta lepida	52, 108, 109
	Lacerta viridis	52
	Podarcis hispanica	35, 52, 108, 137, 198
	Podarcis muralis	52
	Psammodromus sp.	35, 108
	Psammodromus algirus	52, 190, 191
	Psammodromus hispanicus	137, 198
	Colubridae	185
	Natrix natrix	52, 185
BUBO BUBO		
	Amphibia	14, 54, 184
	Anura	27, 147
	Pelobates cultripes	52, 112, 156
	Bufo sp.	147
	Bufo bufo	5, 27, 52, 112
	"Green frogs"	52, 112
	Rana temporaria	52, 69, 72
	Reptilia	14, 54
	Mauremys caspica	52, 112

	Tarentola mauritanica	147
	Anguis fragilis	52
	Lacertidae	27, 112, 184
	Lacerta agilis	69
	Lacerta lepida	27, 52, 112, 147, 156, 198
	Lacerta viridis	147
	Podarcis hispanica	52, 112
	Psammodromus algirus	52, 112
	Colubridae	6, 112, 184
	Coluber viridiflavus	99
	Natrix natrix	52
ASIO OTUS		
	Amphibia	185
	Pelobates fuscus	52
	Rana sp.	175
	Rana temporaria	52, 94, 175, 204
	Tarentola mauritanica	196
	Anguis fragilis	52
	Lacertidae	46, 52, 175, 196, 197
ASIO FLAMMEUS		
	Rana temporaria	52, 91, 93
	Lacerta vivipara	52
	Podrcis muralis	52
OTUS SCOPS		
	Hyla arborea	52
	Lacertidae	52
	Psammodromus algirus	6
ATHENE NOCTUA		
	Amphibia	128, 136, 185
	Pleurodeles waltl	52, 135, 136
	Triturus boscai	52, 141
	Discoglossus sp.	52, 136
	Pelobates cultripes	135, 136, 190, 191
	Pelobates fuscus	52
	Hyla arborea	52
	Rana sp.	128
	"Green frogs"	52, 136
	Rana temporaria	52, 136, 185
	Reptilia	135, 136, 185
	Anguis fragilis	52
	Chalcides bedriagai	52, 136
	Lacertidae	63, 136
	Acanthodactylus erythrurus	52, 191
	Lacerta agilis	52
	Lacerta vivipara	52
	Podarcis sp.	136
	Podarcis hispanica	136
	Podarcis muralis	52
	Psammodromus sp.	136
	Psammodromus algirus	52, 136

	Natrix maura	52
	Natrix natrix	52
STRIX ALUCO		
	Salamandra salamandra	148
	Triturus alpestris	16
	Triturus cristatus	52
	Anura	16, 175
	Alytes obstetricans	52, 201
	Discoglossus sp.	201
	Pelobates cultripes	52, 129, 201
	Pelobates fuscus	52
	Bufo bufo	52
	Hyla arborea	52
	Rana dalmatina	105
	"Green frogs"	52, 175
	Rana temporaria	52, 175, 185, 201, 204
	Reptilia	185
	Gekkonidae	52
	Tarentola mauritanica	40, 201
	Anguis fragilis	52
	Lacerta agilis	52
	Lacerta viridis	40, 52
	Podarcis hispanica	201
	Podarcis muralis	52
	Elaphe scalaris	40
	Natrix sp.	52
CORACIIFORMES		
ALCEDO ATTHIS		
	Amphibia	101
	Anura	118
	Rana sp.	52, 118
	"Green frogs"	52, 118
CORACIAS GARRULUS		
	Rana sp.	52
	"Green frogs"	52
	Rana temporaria	52
	Anguis fragilis	52
	Lacertidae	52
	Lacerta agilis	52
	Lacerta vivipara	52
	Podarcis sp.	52
	Natrix natrix	52
UPUPA EPOPS		
	Anura	52
	Anguis fragilis	52
	Acanthodactylus erythrurus	190
	Lacerta agilis	52
	Psammodromus algirus	190, 191

PICIFORMES

JYNX TORQUILLA		
	Rana temporaria	52
PICUS VIRIDIS		
	Vipera berus	52

PASSERIFORMES

MOTACILLA ALBA		
	Rana temporaria	187
LANIUS SENATOR		
	Amphibia	88
	Lacertidae	88
LANIUS EXCUBITOR		
	Rana temporaria	102
	Blanus cinereus	190, 191
	Chalcides bedriagai	190, 191
	Lacertidae	190
	Acanthodactylus erythrurus	190
	Podarcis hispanica	191
	Psammodromus algirus	190, 191
LANIUS COLLURIO		
	Anura	125
	Rana sp.	125
	Lacertidae	125
SAXICOLA TORQUATA		
	Lacertidae	191
MONTICOLA SAXATILIS		
	Rana sp.	53
	Lacertidae	53, 133
MONTICOLA SOLITARIUS		
	Anura	53
	Gekkonidae	53
	Lacertidae	53
	Colubridae	53
ERITHACUS RUBECULA		
	Lacerta agilis	104
	Lacerta vivipara	104
TURDUS TORQUATUS		
	Salamandra salamandra	53
	Lacertidae	121
	Lacerta vivipara	53, 121
TURDUS MERULA		
	Triturus sp.	53
	Anura	53
	Anguis fragilis	81
	Lacertidae	53
	Colubridae	170
	Natrix sp.	53
TURDUS PHILOMELOS		
	Anguis fragilis	52, 117
	Lacertidae	53
	Lacerta vivipara	39, 53

STURNUS UNICOLOR		
	Pelobates cultripes	190, 191
	Colubridae	190
GARRULUS GLANDARIUS		
	Reptilia	115, 168
	Natrix sp.	115
PICA PICA		
	Amphibia	115
	Reptilia	115
	Podarcis hispanica	70
	Malpolon monspessulanus	70
CORVUS MONEDULA		
	Amphibia	115
CORVUS CORONE		
	Amphibia	115, 122
	Anura	122
	Reptilia	122
	Lacertidae	122
CORVUS CORAX		
	Amphibia	115
	Pelobates cultripes	191
	Bufo sp.	56
	Rana sp.	56, 191
	Reptilia	115
	Colubridae	56

AMPHIBIANS AND REPTILES EATEN BY BIRDS

PREY	PREDATOR	REFERENCE
** AMPHIBIA **		
	Tachybaptus ruficollis	49
	Ixobrychus minutus	49
	Bulbucus ibis	138
	Anas platyrynchos	49
	Anas strepera	49
	Anas acuta	49
	Anas clypeata	49
	Netta rufina	49
	Accipiter gentilis	75
	Buteo buteo	185
	Aquila chrysaetos	43, 44
	Neophron percnopterus	181
	Circaetus gallicus	183
	Circus aeruginosus	185
	Falco tinnunculus	185
	Gallinula chloropus	50
	Himantopus himantopus	51

	Burhinus oedicnemus	1, 51
	Larus argentatus	51
	Tyto alba	3, 32, 34, 76, 95, 176
	Bubo bubo	14, 54, 184
	Asio otus	185
	Athene noctua	128, 136, 185
	Alcedo atthis	101
	Lanius senator	89
	Pica pica	115
	Corvus monedula	115
	Corvus corone	115, 122
	Corvus corax	115
CAUDATA		
	Egretta garzetta	202
	Ciconia ciconia	164
	Ciconia nigra	49
	Milvus milvus	190, 191
SALAMANDRA SALAMANDRA		
	Buteo buteo	33
	Gallus gallus	116
	Strix aluco	148
	Turdus torquatus	53
PLEURODELES WALTL		
	Nycticorax nycticorax	190
	Bulbucus ibis	138
	Ardea purpurea	2
	Ciconia ciconia	124
	Ciconia nigra	71, 87
	Milvus milvus	65
	Milvus migrans	50, 61, 190
	Buteo buteo	191
	Neophron percnopterus	17, 86
	Himantopus himantopus	199
	Athene noctua	52, 135, 136
TRITURUS SP.		
	Botaurus stellaris	49
	Nycticorax nycticorax	49
	Ardea cinerea	149
	Ardea purpurea	49
	Rallus aquaticus	50
	Turdus merula	53
TRITURUS ALPESTRIS		
	Tachybaptus ruficollis	171
	Strix aluco	16
TRITURUS BOSCAI		
	Athene noctua	52, 141
TRITURUS MARMORATUS		
	Ciconia nigra	71
	Milvus milvus	190
TRITURUS HELVETICUS		
	Egretta garzetta	189

TRITURUS CRISTATUS

	Ardeola ralloides	189
	Strix aluco	52

ANURA

	Ardeidae	96, 151
	Botaurus stellaris	49
	Nycticorax nycticorax	189, 202
	Egretta garzetta	38, 202
	Buteo buteo	33, 131
	Circus pygargus	169
	Circus aeruginosus	169
	Falco tinnunculus	29, 191
	Tyto alba	31, 57
	Bubo bubo	27, 147
	Strix aluco	16, 175
	Alcedo atthis	118
	Upupa epops	52
	Lanius collurio	125
	Monticola solitarius	53
	Turdus merula	53
	Corvus corone	122

DISCOGLOSSIDAE

ALYTES OBSTETRICANS

	Strix aluco	52, 201

DISCOGLOSSUS SP.

	Ciconia ciconia	49, 124
	Ciconia nigra	71
	Buteo buteo	33
	Tyto alba	32, 47, 52, 196
	Athene noctua	52, 136
	Strix aluco	201

PELOBATIDAE

PELOBATES CULTRIPES

	Nycticorax nycticorax	19, 189, 190, 191
	Ardeola ralloides	191
	Egretta garzetta	49, 189, 202
	Ardea cinerea	49
	Ardea purpurea	2, 49
	Ciconia ciconia	124
	Ciconia nigra	71, 87
	Milvus milvus	50, 86
	Milvus migrans	11, 18, 50, 61, 80, 86, 190, 191
	Buteo buteo	50, 86
	Neophron percnopterus	191
	Circaetus gallicus	50, 86
	Larus ridibundus	51
	Gelochelidon nilotica	48, 192, 193

	Tyto alba	32, 36, 52, 108, 129, 137, 152, 190, 191
	Bubo bubo	52, 112, 156
	Athene noctua	135. 136, 190, 191
	Strix aluco	52, 129, 201
	Sturnus unicolor	190, 191
	Corvus corax	191
PELOBATES FUSCUS		
	Ardea cinerea	49
	Burhinus oedicnemus	51
	Asio otus	52
	Athene noctua	52
	Strix aluco	52

PELODYTIDAE

PELODYTES PUNCTATUS		
	Falco naumanni	50, 83
	Tyto alba	52, 108, 137

BUFONIDAE

	Ciconia ciconia	49, 164
	Ciconia nigra	73
	Cygnus olor	49
	Milvus milvus	50
	Milvus migrans	50
	Buteo buteo	50
	Neophron percnopterus	50, 71
	Falco peregrinus	50
	Rallus aquaticus	50
	Bubo bubo	147
	Corvus corax	56
BUFO BUFO		
	Ardea cinerea	90
	Ciconia ciconia	186
	Pernis apivorus	50
	Milvus milvus	50, 65, 86, 203
	Milvus migrans	5, 7, 80, 86
	Buteo buteo	5, 33, 77, 85, 86
	Hieraetus pennatus	5
	Hieraetus fasciatus	173
	Circaetus gallicus	4, 5, 50
	Circus pygargus	50
	Larus argentatus	103
	Larus marinus	103
	Cuculus canorus	140
	Tyto alba	52, 92, 185
	Bubo bubo	5, 27, 52, 112
	Strix aluco	52
BUFO CALAMITA		
	Milvus milvus	86
	Buteo buteo	86

BUFO VIRIDIS		
	Circaetus gallicus	50
HYLIDAE		
HYLA ARBOREA (INC.	H. MERIDIONALIS)	
	Ardeola ralloides	49, 190
	Bulbucus ibis	19, 191
	Egretta garzetta	49, 189, 190
	Pernis apivorus	37, 50
	Otus scops	52
	Athene noctua	52
	Strix aluco	52
RANIDAE		
	Gavia arctica	49
	Botaurus stellaris	49
	Nycticorax nycticorax	49, 189
	Ardeola ralloides	49, 100, 189
	Bulbucus ibis	19, 49
	Egretta garzetta	49, 100, 189
	Ardea cinerea	49, 96, 189
	Ardea purpurea	49
	Ciconia ciconia	45, 49, 150, 164
	Ciconia nigra	49
	Cygnus olor	49
	Aythya ferina	49
	Mergus albellus	49
	Mergus merganser	74
	Elanus caeruleus	50, 177, 178
	Pernis apivorus	77
	Milvus milvus	50
	Milvus migrans	50
	Buteo buteo	50
	Neophron percnopterus	50
	Circaetus gallicus	4
	Circus pygargus	155
	Circus aeruginosus	50
	Falco peregrinus	50
	Phasianus colchicus	50
	Grus grus	50
	Rallus aquaticus	50
	Fulica atra	50
	Otis tarda	50
	Otis tetrax	50
	Tringa nebularia	179
	Chlidonias hybrida	190
	Tyto alba	15, 32, 95
	Asio otus	175
	Athene noctua	128
	Alcedo atthis	52, 118
	Coracias garrulus	52
	Lanius collurio	125
	Monticola saxatilis	53

	Corvus corax	56, 191
RANA DALMATINA		
	Tyto alba	52
	Strix aluco	105
"GREEN FROGS"		
	Ardeidae	190
	Botaurus stellaris	49, 98
	Ixobrychus minutus	49
	Nycticorax nycticorax	49, 189, 202
	Ardeola ralloides	49
	Bulbucus ibis	19, 110, 138, 166
	Egretta garzetta	19, 189, 202
	Ciconia ciconia	49, 124
	Ciconia nigra	73
	Pernis apivorus	22, 50, 85
	Milvus milvus	86
	Milvus migrans	61, 80, 191
	Buteo buteo	21, 86, 191
	Circaetus gallicus	50
	Circus pygargus	50
	Circus aeruginosus	190
	Gelochelidon nilotica	48, 126
	Tyto alba	35, 36, 47, 52, 95, 108, 137, 185
	Bubo bubo	52, 112
	Athene noctua	52, 136
	Strix aluco	52, 175
	Alcedo atthis	52, 118
	Coracias garrulus	52
RANA TEMPORARIA		
	Phalacrocorax carbo	49, 158
	Ardea cinerea	149
	Ciconia ciconia	49, 79
	Pernis apivorus	50
	Milvus milvus	50, 58, 203
	Buteo buteo	134
	Circus pygargus	50
	Falco columbarius	160
	Falco tinnunculus	50, 59, 188, 202
	Larus canus	161
	Larus argentatus	103
	Larus marinus	103
	Cuculus canorus	140
	Tyto alba	52, 66, 92, 174, 185, 204
	Bubo bubo	52, 69, 70
	Asio otus	52, 94, 175, 204
	Asio flammeus	52, 91, 93
	Athene noctua	52, 136, 185
	Strix aluco	52, 175, 185, 201, 204
	Coracias garrulus	52
	Jynx torquilla	52

	Motacilla alba	187
	Lanius excubitor	102
**** REPTILIA ****		
	Bulbucus ibis	138
	Egretta garzetta	202
	Aquila heliaca	62
	Aquila chrysaetos	43, 64, 107
	Neophron percnopterus	181
	Circus pygargus	114
	Falco subbuteo	50
	Falco tinnunculus	180
	Larus ridibundus	51
	Larus argentatus	51
	Tyto alba	176
	Bubo bubo	14, 54
	Athene noctua	135, 136, 185
	Strix aluco	185
	Garrulus glandarius	115, 168
	Pica pica	115
	Corvus corone	122
	Corvus corax	115
TESTUDINES		
	Neophron percnopterus	50
	Aegypius monachus	50
TESTUDINIDAE		
	Aquila chrysaetos	50
	Neophron percnopterus	17
	Gypaetus barbatus	50, 113
	Aegypius monachus	50
TESTUDO GRAECA		
	Milvus milvus	65
	Aquila heliaca	50
	Aquila chrysaetos	64
	Gypaetus barbatus	50
TESTUDO HERMANNI		
	Gypaetus barbatus	50
EMYDIDAE		
	Ciconia ciconia	124
EMYS ORBICULARIS		
	Neophron percnopterus	17
MAUREMYS CASPICA		
	Ciconia ciconia	49
	Milvus migrans	61, 80
	Neophron percnopterus	17, 86, 154
	Bubo bubo	52, 112
AMPHISBAENIA		
BLANUS CINEREUS		
	Milvus milvus	65
	Buteo buteo	86, 191
	Circus pygargus	114

	Falco naumanni	50, 82, 83
	Falco tinnunculus	191
	Lanius excubitor	190, 191
LACERTILIA		
CHAMAELEONTIDAE		
CHAMAELEO CHAMAELEON		
	Tyto alba	52
GEKKONIDAE		
	Buteo buteo	97
	Strix aluco	52
	Monticola solitarius	53
HEMIDACTYLUS TURCICUS		
	Tyto alba	137, 198
TARENTOLA MAURITANICA		
	Ardeidae	153
	Bulbucus ibis	49, 110
	Circus pygargus	86
	Falco naumanni	50, 82, 191
	Tyto alba	52, 137, 146, 194 198
	Bubo bubo	147
	Asio otus	196
	Strix aluco	40, 201
ANGUIDAE		
ANGUIS FRAGILIS		
	Ciconia ciconia	49, 150
	Peris apivorus	50
	Milvus milvus	50, 86, 203
	Buteo buteo	33, 50, 131
	Ciracetus gallicus	42, 50, 183
	Falco tinnunculus	50, 59, 77
	Grus grus	50
	Tyto alba	52
	Bubo bubo	52
	Asio otus	52
	Athene noctua	52
	Strix aluco	52
	Coracias garrulus	52
	Upupa epops	52
	Turdus merula	81
	Turdus philomelos	52, 117
SCINCIDAE		
	Ciconia ciconia	124
	Falco naumanni	50, 83
CHALCIDES BEDRIAGAI		
	Milvus milvus	25
	Circus pygargus	114
	Athene noctua	52, 136
	Lanius excubitor	190, 191
CHALCIDES CHALCIDES		
	Bulbucus ibis	49, 110,138, 190
	Circaetus gallicus	86

	Circus pygargus	114, 154
	Falco naumanni	82, 83
	Scolopax rusticola	60
LACERTIDAE		
	Ardeidae	153
	Nycticorax nycticorax	49, 189
	Ardeola ralloides	49, 189
	Bulbucus ibis	19
	Egretta garzetta	49
	Ardea cinerea	49
	Ardea purpurea	49
	Ciconia ciconia	45, 49, 124, 150, 164
	Ciconia nigra	49
	Pernis apivorus	50
	Milvus milvus	25, 50
	Milvus migrans	50
	Accipiter gentilis	85
	Accipiter nisus	50
	Buteo buteo	33, 50, 185
	Hieraetus fasciatus	50, 173
	Aquila chrysaetos	50, 182
	Neophron percnopterus	50
	Aegypius monachus	50
	Circaetus gallicus	4
	Circus cyaneus	169
	Circus pygargus	18, 114, 155, 169
	Circus aeruginosus	169
	Falco peregrinus	50
	Falco eleonorae	50
	Falco naumanni	18, 26, 83
	Falco tinnunculus	6, 7, 29, 77, 85, 172, 185
	Grus grus	50
	Porzana pusilla	50
	Otis tarda	50
	Larus argentatus	132
	Clamator glandarius	52
	Tyto alba	32, 57, 76, 92, 185
	Bubo bubo	27, 112, 184
	Asio otus	46, 52, 175, 196, 197
	Otus scops	52
	Athene noctua	63, 136
	Coracias garrulus	52
	Lanius senator	88
	Lanius excubitor	190
	Lanius collurio	125
	Saxicola torquata	191
	Monticola saxatilis	53, 133
	Monticola solitarius	53
	Turdus torquatus	121

	Turdus merula	53
	Turdus philomelos	53
	Corvus corone	122
ACANTHODACTYLUS ERYTHRURUS		
	Bulbucus ibis	138, 189, 191
	Buteo buteo	89
	Circus pygargus	154, 191
	Falco tinnunculus	85, 191
	Tyto alba	35, 52, 190, 191
	Athene noctua	52, 191
	Upupa epops	190
	Lanius excubitor	190
LACERTA AGILIS		
	Circaetus gallicus	50
	Phasianus colchicus	50
	Bubo bubo	69
	Athene noctua	52
	Strix aluco	52
	Coracias garrulus	52
	Upupa epops	52
	Erithacus rubecula	104
LACERTA LEPIDA		
	Bulbucus ibis	138
	Ciconia ciconia	124
	Ciconia nigra	62
	Elanus caeruleus	106
	Pernis apivorus	37, 50, 77
	Milvus milvus	7, 25, 50, 65, 85, 86, 154, 190, 191
	Milvus migrans	9, 11, 50, 61, 80, 85, 86, 152, 154, 190, 191
	Accipiter gentilis	6, 7, 85, 86, 143
	Buteo buteo	6, 7, 18, 33, 85, 86, 97, 143, 154, 191, 197
	Hieraetus pennatus	7, 12, 18, 50, 85, 86, 119, 145, 154, 191, 197
	Hieraetus fasciatus	6, 8, 28, 41, 50, 55, 84, 123, 159, 173, 195
	Aquila heliaca	50, 62, 86, 190, 191
	Aquila chrysaetos	18, 64, 77, 78, 86, 123
	Neophron percnopterus	6, 17, 50, 71, 85, 86, 127, 154, 163
	Gypaetus barbatus	113
	Aegypius monachus	111

	Circaetus gallicus	4, 18, 50, 86, 120, 183, 190, 191, 197
	Circus pygargus	114, 154, 155
	Falco naumanni	50, 82, 83
	Falco tinnunculus	7, 18, 191
	Gelochelidon nilotica	193
	Tyto alba	52, 108, 109
	Bubo bubo	27, 52, 112, 147, 156, 198
LACERTA SCHREIBERI		
	Ciconia ciconia	142
	Pernis apivorus	37, 50
	Buteo buteo	7
LACERTA VIRIDIS		
	Ardea cinerea	144
	Pernis apivorus	77
	Hieraetus fasciatus	28, 41, 173, 195
	Aquila chrysaetos	13
	Neophron percnopterus	50
	Circaetus gallicus	42, 50, 183
	Falco peregrinus	165
	Tyto alba	52
	Bubo bubo	147
	Strix aluco	40, 52
LACERTA VIVIPARA		
	Circus cyaneus	157
	Falco columbarius	20
	Falco tinnunculus	50, 59, 200, 205
	Asio flammeus	52
	Athene noctua	52
	Coracias garrulus	52
	Erithacus rubecula	104
	Turdus torquatus	53, 121
	Turdus philomelos	39, 53
PODARCIS SP.		
	Buteo buteo	33
	Athene noctua	136
	Coracias garrulus	52
PODARCIS HISPANICA		
	Bulbucus ibis	166
	Ciconia ciconia	124
	Milvus milvus	25
	Buteo buteo	191
	Falco naumanni	50, 83
	Falco tinnunculus	148, 191
	Tyto alba	35, 52, 108, 137, 198
	Bubo bubo	52, 112
	Athene noctuà	136
	Strix aluco	201
	Lanius excubitor	191
	Pica pica	71

PODARCIS MURALIS		
	Buteo buteo	33
	Circaetus gallicus	183
	Tyto alba	52
	Asio flammeus	52
	Athene noctua	52
	Strix aluco	52
PODARCIS LILFORDI		
	Falco eleonorae	10, 167
PSAMMODROMUS SP.		
	Bulbucus ibis	189
	Milvus milvus	50
	Buteo buteo	89
	Falco naumanni	18, 50, 85
	Tyto alba	35, 108
	Athene noctua	136
PSAMMODROMUS ALGIRUS		
	Bulbucus ibis	49, 110, 138
	Ciconia ciconia	124
	Milvus milvus	25
	Accipiter gentilis	6
	Buteo buteo	6
	Aegypius monachus	111
	Circaetus gallicus	4, 86
	Circus pygargus	50, 114
	Falco naumanni	82, 83
	Falco tinnunculus	6, 18, 191
	Burhinus oedicnemus	191
	Tyto alba	52, 190, 191
	Bubo bubo	52, 112
	Otus scops	6
	Athene noctua	52, 136
	Upupa epops	190, 191
	Lanius excubitor	190, 191
PSAMMODROMUS HISPANICUS		
	Bulbucus ibis	138
	Milvus milvus	86
	Buteo buteo	86
	Circus pygargus	86
	Falco naummani	83
	Falco tinnunculus	6, 191
	Tyto alba	137, 198
SERPENTES		
COLUBRIDAE	Ciconia ciconia	124, 164
	Ciconia nigra	49
	Milvus milvus	25, 190, 191
	Milvus migrans	191
	Buteo buteo	6, 7, 86, 97, 185
	Hieraetus fasciatus	41
	Aquila heliaca	190, 191
	Aquila chrysaetos	13, 43, 44, 64, 78, 123, 182

	Neoprhon percnopterus	6, 17, 50
	Gypaetus barbatus	113
	Circaetus gallicus	197
	Circus pygargus	18, 114
	Circus aeruginosus	169
	Falco tinnunculus	77, 185
	Grus grus	50
	Burhinus oedicnemus	191
	Tyto alba	185
	Bubo bubo	6, 112, 184
	Monticola solitarius	53
	Turdus merula	170
	Sturnus unicolor	190
	Corvus corax	56
COLUBER HIPPOCREPIS		
	Buteo buteo	85, 86
	Aquila heliaca	62
	Circaetus gallicus	4, 86
COLUBER VIRIDIFLAVUS		
	Circaetus gallicus	50, 183
	Bubo bubo	99
CORONELLA SP.		
	Ciconia ciconia	49
	Circaetus gallicus	183
CORONELLA AUSTRIACA		
	Ciconia ciconia	150
	Circaetus gallicus	50, 86
CORONELLA GIRONDICA		
	Milvus migrans	11
	Buteo buteo	6, 33
	Circaetus gallicus	4
ELAPHE LONGISSIMA		
	Pernis apivorus	50
	Circaetus gallicus	42, 50, 183
ELAPHE SCALARIS		
	Milvus milvus	50, 65, 86
	Milvus migrans	80
	Buteo buteo	50, 86, 154
	Aquila heliaca	50, 62
	Aquila chrysaetos	18, 139
	Neophron percnopterus	17, 73, 127
	Circaetus gallicus	4, 50, 85, 86, 120, 183, 190, 191
	Strix aluco	40
MACROPROTODON CUCULLATUS		
	Milvus milvus	50, 86
MALPOLON MONSPESSULANUS		
	Milvus milvus	50, 65, 85, 86
	Milvus migrans	85, 190, 191
	Buteo buteo	6, 33, 86
	Hieraetus fasciatus	6, 123
	Aquila heliaca	50, 62, 190, 191

	Aquila chrysaetos	64
	Neophron percnopterus	17, 50, 73, 85, 127, 163
	Aegypius monachus	111
	Circaetus gallicus	4, 50, 85, 86, 120, 183, 190, 191
	Falco naumanni	82
	Pica pica	72
NATRIX SP.		
	Nycticorax nycticorax	189
	Ardea purpurea	49
	Ciconia ciconia	124
	Pernis apivorus	50
	Milvus milvus	50
	Milvus migrans	50
	Circaetus gallicus	18
	Strix aluco	52
	Turdus merula	53
	Garrulus glandarius	115
NATRIX MAURA		
	Nycticorax nycticorax	190
	Ardea cinerea	144
	Ardea purpurea	2, 162, 190, 191
	Ciconia nigra	73
	Milvus milvus	25, 65, 86, 191
	Milvus migrans	61, 80, 190, 191
	Buteo buteo	85, 97, 191
	Aquila heliaca	62
	Neophron percnopterus	17, 154
	Circaetus gallicus	4, 50, 183, 190, 191
	Circus aeruginosus	50
	Falco naumanni	50, 83
	Porphyrio porphyrio	50
	Athene noctua	52
NATRIX NATRIX		
	Podiceps cristatus	49
	Botaurus stellaris	49
	Nycticorax nycticorax	49
	Bulbucus ibis	166
	Ardea cinerea	49, 144
	Ardea purpurea	23
	Ciconia ciconia	49, 150
	Pernis apivorus	22, 50
	Milvus milvus	65, 86
	Milvus migrans	80
	Buteo buteo	24, 50, 97
	Neophron percnopterus	17, 86, 127
	Circaetus gallicus	4, 42, 50, 183
	Circus pygargus	50
	Circus aeruginosus	50
	Phasianus colchicus	50

	Tyto alba	52, 185
	Bubo bubo	52
	Athene noctua	52
	Coracias garrulus	52
VIPERIDAE		
	Ciconia ciconia	30, 150
	Buteo buteo	50
	Aquila chrysaetos	50
VIPERA ASPIS		
	Circaetus gallicus	42, 50
VIPERA LATASTEI		
	Circaetus gallicus	4
VIPERA BERUS		
	Circaetus gallicus	50
	Circus pygargus	50
	Phasianus colchicus	50
	Larus argentatus	130
	Picus viridis	52

REFERENCES

1. Amat, J.A. 1986. Information on the diet of the stone curlew _Burhinus oedicnemus_ in Doñana, Southern Spain. Bird Study 33(2): 71-73.
2. Amat, J.A., and C.M. Herrera. 1977. Alimentación de la garza imperial (_Ardea purpurea_) en las Marismas del Guadalquivir durante el periodo de nidificación. Ardeola 24: 95-104.
3. Amat, J.A., and R.C. Soriguer. 1981. Analyse comparative de régimes alimentaires de L'effraie _Tyto alba_ et du Moyen-Duc _Asio otus_ dans l'ouest de l'Espagne. Alauda 49(2): 112-120.
4. Amores, F., and A. Franco. 1981. Alimentation et écologie du Circaète Jean-le-Blanc dans le sud de l'Espagne. Alauda 49(1): 59-61.
5. Amores, F., A. Franco, and J. Mellado. 1979. Presencia de _Bufo bufo spinosus_ Daudin en la dieta de Falconiformes y Strigiformes en Sierra Morena Occidental. Doñana, Acta Vert. 6(2): 238-239.
6. Amores, F., J. Oria, E. Roy, and F. Torrent. 1984. Estudio faunístico de la zona del "Alto Tajo" comprendida entre el puente de Valtablado del Río y el Puente de San Pedro. Monogr. I.C.O.N.A. 32. Minist. Agricult.; Madrid.
7. Araujo, J. 1973. Falconiformes del Guadarrama Suroccidental. Ardeola 19(2): 257-278.
8. Araujo, J., B. Arroyo, and J.M. Bueno. 1974. Un nido de Aguila perdicera (_Hieraaetus fasciatus_) con tres pollos. Ardeola 20: 343-345.
9. Araujo, J., M. Fernandez Cruz, and C. Garcia Rua. 1973. Contenido de un nido de _Milvus migrans_. Ardeola 19(1) :10.
10. Araujo, J., J. Muñoz Cobo, and F.J. Purroy. 1977. Las rapaces y aves marinas del archipiélago de Cabrera. Naturalia Hispanica 12. I.C.O.N.A.; Madrid.
11. Arroyo, B. 1978. Alimentación del Milano Negro (_Milvus migrans_) en una localidad de España Central. Ardeola 25: 47-58.
12. Arroyo, B., J.M. Bueno, and V. Pérez Mellado. 1976. Biología de reproducción de una pareja de _Hieraetus fasciatus_ en España Central. Doñana, Acta Vert. 3(1): 33-45.
13. Austruy, J.C., and J.M. Cugnasse. 1981. L'Aigle royal _Aquila chrysaetos_, dans le Massif Central. Nos oiseaux 36(4): 133-142.
14. Bagle, P., P.H. Orsini, and J. Boutin. 1987. Variations du régime alimentaire du Hibou grand-duc _Bubo bubo_ en période de reproduction en Basse-Provence. L'oiseau et R.F.O. 57(1): 23-31.
15. Bauduin, H. 1980. Les surplus de proies au site de nid chez la chouette effraie, _Tyto alba_. Nos oiseaux 35(5): 232-238.

16. Baudin, H., and J.L. Dessolin. 1987. A propos de la Chouette hulotte, Strix aluco: réponses apportées et questions posées par les "nichoirs-photos". Nos oiseaux 39(3): 129-134.
17. Bergier, P., and G. Cheylan. 1980. Statut, succès de reproduction et alimentation du rautour pernoptère Neophron percnopterus en France méditerranéenne. Alauda 48(2-3): 75-97.
18. Bernis, F. 1973. Algunos datos de alimentación y depredación de Falconiformes y Estrigiformes ibéricas. Ardeola 19(2): 225-248.
19. Bernis, F., and J.A. Valverde. 1954. La gran colonia de garzas de Doñana en 1953. Munibe 6: 1-37.
20. Bibby, C.J. 1987. Foods of breeding Merlins Falco columbarius in Wales. Bird Study 34(1): 64-70.
21. Blanc, T. 1956. Une accumulation de proies sur un nid de Buses. Nos oiseaux 23(8): 217-218.
22. Blanc, T. 1957. Quelques notes sur le régime de la Bondrée. Nos oiseaux 24(1): 16.
23. Blanc, T. 1957. Un jeune Héron pourpré dégorge une coulevre. Nos oiseaux 24(2): 79.
24. Blanc, T. 1960. La voracité d'un couple de Buses Buteo buteo. Nos oiseaux 25(9): 254.
25. Blanco, J.C., F. Hiraldo, B. Heredia, and L. García. 1987. Alimentación invernal del Milano Real, Milvus milvus (L. 1758) en el Parque Nacional de Doñana. Bol. Est. Centr. Ecol. 16(31): 93-97.
26. Blondel, J. 1964. Notes sur la biologie et le régime alimentaire du Faucon crécerellette Falco naumanni. Nos oiseaux 27(10-11): 329-332.
27. Blondel, J., and O. Badan. 1976. La biologie du Hibou grand-duc en Provence. Nos oiseaux 33(5): 189-219.
28. Blondel, J., L. Coulon, B. Gired, and M. Hortigue. 1969. Deux cents heures d'observation auprès de l'aire de l'Aigle de Bonelli. Nos oiseaux 30(2-3): 37-60.
29. Bonin, B., and L. Strenna. 1986. Sur la biologie du faucon crécerelle Falco tinnunculus en Auxois. Alauda 54(4): 241-262.
30. Bouet, G. 1956. L'alimentation des jeunes cigognes blanches au nid. Rôle des insects. L'oiseau et R.F.O. 26: 59-61.
31. Brown, D.J. 1981. Seasonal variation in the prey of some Barn owls in Gwynedd. Bird Study 28(2): 139-146.
32. Brunet-Leconte, P., and M. Delibes. 1984. Alimentación de la lechuza común Tyto alba en la Cuenca del Duero, España. Doñana, Acta Vert. 11(2): 213-229.
33. Bustamante, J.M. 1985. Alimentación del ratonero común (Buteo buteo, L. 1758) en el Norte de España. Doñana, Acta Vert. 12(1): 51-62.
34. Busser-Stalder, M. 1984. Régime alimentaire de la chouette effraie Tyto alba, durant les périodes de nidification 1978 et 1979, en Anjoie (Jura Suisse). Nos oiseaux 37(8): 392-394.

35. Camacho, I. 1975. La alimentación de Tyto alba (Scop.) en la Vega de Granada. Cuad. Cienc. Biol. (Granada) 1975(4.2): 111-124.
36. Campos, F. 1977. Régimen alimenticio de Tyto alba en las provincias de Salamanca y Zamora. Ardeola 24: 105-119.
37. Castroviejo, J., and S. Fernández. 1968. Nidificación del halcón abejero (Pernis apivorus) en el Bierzo (León). Ardeola 14: 131-135.
38. Catley, G.P. 1983. Unusual feeding action of great white egret. British Birds 76(2): 82-83.
39. Chater, A.O. 1965. Song thrush taking lizard. British Birds 58(12): 513.
40. Cheylan, G. 1971. Le régime de la chouette hulotte (Strix aluco) a Salernes (Var). Alauda 39(2): 150-155.
41. Cheylan, G. 1977. La place trophique de l'aigle de Bonelli Hieraaetus fasciatus dans le biocenoses mediterraneennes. Alauda 45(1): 1-15.
42. Chousssy, D. 1973. Observations sur le circaète Jean-le-Blanc. Nos oiseaux 32(4): 83-89.
43. Clouet, M. 1981. L'Aigle Royal (Aquila chrysaëtos) dans le Pyrénées Françaises. Resultats de 5 ans d'observations. L'oiseau et R.F.O.: 51(2): 89-100.
44. Clouet, M. 1982. L'Aigle Royal dans les Pyrénées Françaises. Acta Biol. Montana 1: 269-280.
45. Collin, A. 1973. Nidification de la cigogne blanche (Ciconia ciconia) en 1972 a Hachy (Lorraine Belge). Aves 10(2): 29-69.
46. Corral, J.F., J.A. Cortés, and J.M. Gil. 1979. Contribución al estudio de la alimentación de Asio otus en el sur de España. Doñana, Acta Vert. 6(2): 179-190.
47. Cortés, J.A. 1988. Sobre diferencias individuales en la alimentación de Tyto alba. Doñana, Acta Vert. 15(1): 99-109.
48. Costa, L. 1984. Alimetación de la pagaza piconegra (Gelochelidon nilotica) en las Marismas del Guadalquivir. Doñana, Acta Vert. 11(2): 185-195.
49. Cramp, S. (ed). 1977. Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Paleartic. Vol.1, Ostrich to Ducks. Oxford Univ. Press.
50. Cramp, S. (ed). 1980. Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Paleartic. Vol.2, Hawks to Bustards. Oxford Univ. Press.
51. Cramp, S. (ed). 1983. Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Paleartic. Vol.3, Wader to Gulls. Oxford Univ. Press.
52. Cramp, S. (ed). 1985. Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Paleartic. Vol.4, Terns to Woodpeckers. Oxford Univ. Press.
53. Cramp, S. (ed). 1988. Handbook of the Birds of Europe, the Middle East and North Africa. The Birds of the Western Paleartic. Vol.5, Tyrant Flycatchers to Trushes. Oxford Univ. Press.

54. Cugnasse, J.M. 1983. Contribution à L'étude du Hibou grand-duc, _Bubo bubo_, dans le Sud du Massif Central. Nos oiseaux 37(3): 117-128.
55. Cugnasse, J.M. 1984. L'Aigle de Bonelli, _Hieraaetus fasciatus_, en Languedoc-Rousillon. Nos oiseaux 37(5): 223-232.
56. Cugnasse, J.M., and C. Riols. 1987. Note sur le régime alimentaire du grand corbeau, _Corvus corax_, dans le Sud du Massif Central. Nos oiseaux 39(2): 57-65.
57. Cuisisn, J., and M. Cuisin. 1979. Le régime alimentaire du la chouette effraye (_Tyto alba_ (Scopoli)) dans le canton des Ricys (Aube) et ses environs inmédiats. L'oiseau et R.F.O. 49(2): 81-89.

58. Davis, P.E., and J.E. Davis. 1981. The food of the red kite in Wales. Bird Study 28(1): 33-40.
59. Davis, T.A.W. 1975. The food of the kestrel in winter and early spring. Bird Study 22(2): 85-91.
60. Debussche, M., and P. Isenmann. 1986. Consommation exceptionnelle d'un vertébré (_Chalcides chalcides_) par une bécasse (_Scolopax rusticola_). L'oiseau et R.F.O. 56(2): 212.
61. Delibes, M. 1975. Alimentación del Milano Negro (_Milvus migrans_) en Doñana (Huelva, España). Ardeola 21(1): 183-207.
62. Delibes, M. 1978. Ecologia alimentaria del Aguila Imperial Ibérica (_Aquila adalberti_) en el Coto de Doñana durante la crianza de los pollos. Doñana, Acta Vert. 5(1-2): 35-60.
63. Delibes, M., P. Brunet-Lecomte, and M. Mañez. 1983. Datos sobre la alimentación de la lechuza común (_Tyto alba_), el buho chico (_Asio otus_) y el mochuelo (_Athene noctua_) en una misma localidad de Castilla la Vieja. Ardeola 30: 57-63.
64. Delibes, M., J. Calderón and F. Hiraldo. 1975. Selección de presas y alimentación en España del Aguila Real (_Aquila chrysaetos_). Ardeola 21(1): 285-303.
65. Delibes, M., and L. García. 1984. Hábitos alimenticios del Milano Real en Doñana durante el periodo de cría. Ardeola 31: 115-121.
66. Delmee, E. 1985. Régime alimentaire de la chouette effraie (_Tyto alba_) et evolution du statut des micromammiferes d'un paysage agricole. Aves 22(3): 169-174.
67. Delmee, E., P. Dachy, and P. Simon. 1979. Etude comparative du regimen alimentaire d'une population forestiere de chouettes hulottes (_Strix aluco_). Le Gerfaut 69(1): 45-77.
68. Delmee, E., P. Dachy, and P. Simon. 1982. Particularites ecologiques des chouettes hulottes (_Strix aluco_) de la Foret de Belaeil-en-Hainaut. Le Gerfaut 72(3): 287-306.
69. Desfayes, M., and P. Geroudet. 1949. Notes sur le grand-duc _Bubo bubo_ (L.). Nos oiseaux 20(3-4): 49-60.

70. Domínguez, L., C.R. Vigal, E. Lázaro, F. Palacios, and J. Garzón. 1980. Alimentación de la urraca (Pica pica L) en el centro de España. Actas I Reunión Iberoamer. Zool. Vert. La Rábida 1977: 799-805.
71. Domínguez, L., J.L. González, L.M. González, J. Garzón, and C. Llandrés. 1985. Datos sobre la alimentación de la Cigüeña Negra (Ciconia nigra L.) en España Centro occidental. Alytes 3: 51-56.
72. Donazar, J.A., and O. Ceballos. 1988. Sur l'alimentation du Hibou Grand duc (Bubo bubo) dans une localité de la haute montagne pyrénéenne espagnole. Alauda 56(3): 274-276.
73. Donazar, J.A., and O. Ceballos. 1988. Alimentación y tasas reproductoras del alimoche (Neophron percnopterus) en Navarra. Ardeola 35(1): 3-14.
74. Doornbos, G. 1979. Winter food habits of smew (Mergus albellus L.) on Lake Yssel, The Netherlands: species and size selection in relation to the fish stocks. Ardea 67(1-2): 42-48.
75. Doucet, J. 1987. Aspects de la predation de l'autour (Accipiter gentilis) en periode de nidification. Aves, Nºesp.: 62-65.
76. Dueñas, M.E., and S.J. Peris. 1985. Análisis de egagrópilas de Tyto alba en la Sierra de Gata (W de España). Alytes 3: 109-144.

77. Elosegui, J. 1973. Informe preliminar sobre alimentación de aves rapaces en Navarra y provincias limítrofes. Ardeola 19(2): 249-256.
78. Elosegui, J. 1975. Notas sobre la Biología del Aguila Real (Aquila chrysaëtos, L.) en Navarra. Munibe 27(3-4): 167-172.

79. Fairley, J.S., and F.L. Clark. 1972. Food of barn owls Tyto alba (Scopoli) over one year at roost in Co. Galway. Irish Natur. J. 17(7): 219-222.
80. Fernández Cruz, M. 1973. Sobre la alimentación del Milano Negro (Milvus migrans) en la estación ornitológica de "El Borbollón" (Cáceres). Ardeola 19(2): 337-343.
81. Foote, R.J. 1978. Blackbird eating slow-worm's tail. British Birds 71(3): 131.
82. Franco, A. 1980. Biología de caza en Falco naumanni. Doñana, Acta Vert. 7(2): 213-227.
83. Franco, A., and J. Andrada. 1976. Alimentación y selección de presa en Falco naumanni. Ardeola 23: 137-187.

84. García, L. 1976. Reproducción del Aguila perdicera, Hieraetus fasciatus, en la Sierra de Cabo de Gata de Almería. Bol. Est. Centr. Ecol. 5: 83-92.
85. Garzón, J. 1968. Las rapaces y otras aves de la Sierra de Gata. Ardeola 14: 97-130.
86. Garzón, J. 1973. Conribución al estudio del status, alimentación y protección de la Falconiformes en España Central. Ardeola 19(2): 279-330.

87. Garzón, J. 1974. Ciconia nigra y Ciconia ciconia criando en nidos contiguos. Ardeola 20: 321-324.
88. Gil Lletget, A. 1944. Bases para el estudio científico de la alimentación en las aves y resultado del análisis de 400 estómagos. Bol. Real. Soc. Hist. Nat. 52: 533-564.
89. Gil Lletget, A. 1945. Bases para el estudio científico de la alimentación en las aves y resultado del análisis de 400 estómagos. Bol. Real. Soc. Hist. Nat. 53: 9-23.
90. Giles, N. 1981. Summer diet of the grey Heron. Scott. Birds 11(5): 153-159.
91. Glue, D.E. 1970. Prey taken by short-eared owls at British breeding sites and winter quarters. Bird Study 17(1): 39-42.
92. Glue, D.E. 1974. Food of the barn owl in Britain and Ireland. Bird Study 21(3): 200-210.
93. Glue, D.E. 1977. Feeding ecology of the short-eared owl in Britain and Ireland. Bird Study 24(2): 70-78.
94. Glue D.E., and G.J. Hammond. 1974. Feeding ecology of the long-eared owl in Britain and Ireland. British Birds 67(9): 361-369.
95. Godin, J. 1975. Donnes sur le régime alimentaire de la chouette effraie (Tyto alba) en Belgique et dans le Nord de la France. Aves 12(3): 105-126.
96. Gomes Oliveira, N. 1971. A colonia da mata de S. Jacinto (Aveiro) em 1971. Cyanopica 1(3): 38-44.
97. Gomez Ruiz, R. 1969. Datos sobre la reproducción del águila ratonera (Buteo buteo) en la provincia de Huelva. Ardeola 15: 32-35.
98. González, L.M., and J.L. González. 1984. Sobre la alimentación del avetoro común (Botaurus stellaris) en España. Doñana, Acta Vert. 11(1): 140-141.
99. Guichard, G. 1956. Notes sur le biologie du grand duc (Bubo bubo bubo L.). L'oiseau et R.F.O. 6(2): 126-134.

100. Hafner, H., V. Boy and G. Gory. 1982. Feeding methods, flock size and feeding success in the little egret Egretta garzetta and the squacco heron Ardeola ralloides in Camargue, Southern france. Ardea 70(1): 45-54.
101. Hallet, C., and J. Doucet. 1982. Le martin-pêcheur (Alcedo atthis) en Wallonie: statut des populations et mesures de protection. Aves 19(1): 1-12.
102. Halliday, K.C.R. 1970. Notes on a great grey shrike wintering in Lanarkshire. Scott. Birds 6: 22-23.
103. Harris, M.P. 1965. The food of some Larus gulls. The Ibis 107(1): 43-53.
104. Heath, P.J. 1988. Robin attacking common lizard. British Birds 81(5): 238.
105. Henry, C., and A. Perthuis. 1986. Composition et structure du régime alimentaire de la chouette hulotte (Strix aluco L.) dans deux régions forestières du Centre de la France. Alauda 54(1): 49-65.

106. Heredia, B. 1983. Alimentación invernal del elanio azul (Elanus caeruleus) en la provincia de Salamanca. Alytes 1(1): 255-265.
107. Heredia, R. 1973. Nota sobre la alimentación y reproducción de Aquila chrysaëtos en Soria y Toledo. Ardeola 19(2): 459-460.
108. Herrera, C.M. 1973. Régimen alimenticio de Tyto alba en España Sudoccidental. Ardeola 19(2): 359-394.
109. Herrera, C.M. 1973. La captura de carnivoros por las Strigiformes. Ardeola 19(2): 439-444.
110. Herrera, C.M. 1974. Observaciones sobre una colonia de Garcillas bueyeras (Bulbucus ibis L.) en Andalucia. Ardeola 20: 287-306.
111. Hiraldo, F. 1976. Diet of the black vulture (Aegypius monachus) in the Iberian Peninsula. Doñana, Acta Vert. 3(1) : 19-31.
112. Hiraldo, F., J. Andrada, and F.F. Parreño. 1975. Diet of the eagle owl (Bubo bubo) in Mediterranean Spain. Doñana, Acta Vert. 2(2): 161-177.
113. Hiraldo, F., M. Delibes, and J. Calderón. 1979. El quebrantahuesos Gypaetus barbatus (L.). Sistemática, taxonomía, biología, distribución y protección. Monogr. I.C.O.N.A. 22. Minist. Agricult.; Madrid.
114. Hiraldo, F., F. Fernández, and F. Amores. 1975. Diet of the Montagu's Harrier (Circus pygargus) in southwestern Spain. Doñana, Acta Vert. 2(1): 25-55.
115. Holyoak, D. 1968. A comparative study of the food of some british Corvidae. Bird Study 15(3): 147-154.
116. Horter, M, and H. Greven. 1981. The relative edibility of juvenile fire salamanders Salamandra salamandra. Amphibia-Reptilia 2(1): 15-22.
117. Husband, C.I. 1967. Song thrush attacking slow-worm. British Birds 60(4): 168-169.

118. Iribarren, I.B., and L. Domínguez. 1982. Contribution a l'etude du régime alimentaire du Martin-pêcheur (Alcedo atthis L. 1758). Alauda 50(2): 81-91.
119. Iribarren, J.J. 1975. Biologia del Aguila calzada (Hieraëtus pennatus) durante el período de nidificación en Navarra. Ardeola 21(1): 305-320.
120. Iribarren, J.J., and A. Rodríguez-Arbeola. 1973. Observaciones de un nido del Aguila culebrera (Circaetus gallicus), Navarra 1972. Ardeola 19(1): 101-106.
121. Isenmann, P. 1985. Nidification rupestre et prédation sur un lacertidé du Merle à plastron (Turdus torquatus alpestris) en Savoie. Alauda 53(3): 231-232.

122. Jollet, A. 1984. Variations saisonnières du régime alimentaire de la Cornielle noire (Corvus corone L.) dans le bocage limousin. L'oiseau et R.F.O. 54(2): 109-130.
123. Jordano, P. 1981. Relaciones interespecificas y coexistencia entre el Aguila Real (Aquila chrysaetos) y el Aguila Perdicera (Hieraaëtus fasciatus) en Sierra Morena Central. Ardeola 28: 67-88.

124. Lázaro, E. 1984. Contribución al estudio de la alimentación de la Cigüeña Blanca (_Ciconia c. ciconia_) (L.) en España. Tesis Doctoral. Univ. Complutense Madrid.

125. Lefranc, N. 1979. Contribution à l'écologie de la Pie-grieche écorcheur _Lanius collurio_ L. dans les Vosges moyennes. L'oiseau et R.F.O. 49(4): 245-298.

126. Leveque, R. 1956. Une colonie de sternes hansel en Camarge. Nos oiseaux 23(9): 233-246.

127. Leveque, R. 1964. A propos d'un nid provençal du Percnoptère. Nos oiseaux 27(12): 329-332.

128. Libois, R. 1977. Contribution a l'etude du régime alimentaire de la chouette cheveche (_Athene noctua_) en Belgique. Aves 14(3): 165-177.

129. López-Gordo, J.L., E. Lázaro, and M. Fernández Cruz. 1976. Comparación de las dietas de _Strix aluco_, _Asio otus_ y _Tyto alba_ en un mismo biotopo de la provincia de Madrid. Ardeola 23: 189-221.

130. Lowe, W.P. 1940. Herring-gull and snake. The Ibis 4: 728.

131. Mac Nally, L. 1962. Food at a buzzards' nest. Scott. Birds 2(3): 196-198.

132. Madon, P. 1935. Contribution a l'etude du régime des oiseaux aquatics. Alauda 7: 382-401.

133. Magnenat, D. 1969. Proies volumineuses du Merle de roche _Monticola saxatilis_. Nos oiseaux 30(2-3): 69.

134. Maguire, E.J. 1979. Notes on the breeding of the buzzard in Kintyre. Western Natur. 8: 3-13.

135. Máñez, M. 1983. Espectro alimenticio del Mochuelo común Ath_ene noctua_) en España. Alytes 1(1): 275-290.

136. Máñez, M. 1983. Variaciones geográficas y estacionales en la dieta del mochuelo común (_Athene noctua_) en España. Actas XV Congr. Int. Fauna Cinegética y Silvestre. Trujillo 1981: 617-634.

137. Martín, J., and J.R. Vericad. 1977. Datos sobre la alimentación de la lechuza (_Tyto alba_) en Valencia. Mediterránea 2: 35-47.

138. Mateos, A., and E. Lázaro. 1986. Contribución al estudio de la alimentación de la garcilla bueyera (_Bulbucus ibis ibis_ L.) en Extremadura. Alytes 4: 49-68.

139. Mathieu, R., and J.P. Choisy. 1982. L'Aigle royal (_Aquila chrysaetos_) dans les Alpes Méridionales françaises de 1964 à 1980. Bièvre 4(1): 1-32.

140. Mc. Dougall, D. 1983. Cuckoo eating young amphibians. Scott. Birds 12(5): 162-163.

141. Melendro, J., and J. Gisbert. 1977. Notas ornitológicas breves. Mochuelo. Ardeola 24: 261.

142. Melendro, J., J. Gisbert, and A. Rodríguez Valverde. 1977. Datos sobre la alimentación de _Ciconia ciconia_. Ardeola 24: 207-209.

143. Morillo, C., and J. Lalanda. 1972. Primeros datos sobre la ecología de las Falconiformes en los Montes de Toledo. Bol. Est. Centr. Ecología 1(2): 57-67.

144. Moser, M.E. 1986. Prey profitability for adult grey herons *Ardea cinerea* and the constraints on prey size when feeding young nestlings. The Ibis 128: 392-405.

145. Nevado, J.C., L. García, and J.A. Oña. 1988. Sobre la alimentación del Aguila calzada (*Hieraaetus pennatus*) en las Sierras del Norte de Almería en la época de reproducción. Ardeola 35(1): 147-150.

146. Nos, M.R. 1961. Estudio de los ovillos regurgitados por una pareja de *Tyto alba* en la comarca de la Maresma (Provincia de Barcelona). Misc. Zool. 1: 139-146.

147. Orsini, P. 1985. Le régime alimentaire du hibou grand-duc *Bubo bubo* en Provence. Alauda 53(1): 11-28.

148. Otero, C., E. Castín, R. Senosiain, and F. Portillo. 1978. Fauna de Cazorla. Vertebrados. Monogr. I.C.O.N.A. 19. Minist. Agricult.; Madrid.

149. Owen, D.F. 1955. The food of the heron *Ardea cinerea* in the breeding season. The Ibis 97(2): 276-295.

150. Parent, G.H. 1973. La signification ecologique de la nidification de la Cigogne blanche (*Ciconia ciconia* L.) en Lorraine Belge, en 1972. Aves 10(2): 70-112.

151. Pechuán, L. 1971. Sobre la colonia de garzas del lago de La Albufera de Valencia. Ardeola vol.esp.: 397-404.

152. Pérez-Chiscano, J.L. 1967. Estudio de una comunidad de aves de presa (primavera-verano, 1968). Ardeola 13(1): 177-189.

153. Pérez-Chiscano, J.L. 1970. Notas sobre nuevas colonias de Ardeidas y otros datos de aves de Extremadura. Ardeola 16: 246-250.

154. Pérez-Chiscano, J.L. 1973. Sumario informe sobre la alimentación de rapaces en el nor-este de la provincia de Badajoz. Ardeola 19(2): 331-336.

155. Pérez-Chiscano, J.L., and M. Fernández Cruz. 1971. Sobre *Grus grus* y *Circus pygargus* en Extremadura. Ardeola vol esp.: 509-574.

156. Pérez Mellado, V. 1978. Alimentación del Buho Real (*Bubo bubo* L.) en España Central. Ardeola 25: 98-112.

157. Picozzi, N. 1978. Dispersion, breeding and prey of the hen harrier *Circus cyaneus* in Glen Dye, Kincardineshire. The Ibis 120(4): 498-509.

158. Ponting, E.D. 1967. Cormorant eating frog. British Birds 60(11): 482.

159. Real i Orti, J. 1982. Premieres donnes sur une population d'aigle de Bonelli dans une partie de Cordillere pre-littorale catalane. Acta Biol. Montana 1: 293-301.

160. Rebecca, G.W. 1983. Cuckoo eating young amphibians. Scott. Birds 12(5): 162-163.

161. Ritchie, J. 1926. A curious food suply of the Common gull. Common gull feeding upon frogs. Scotland Natur. 1926: 22-23.

162. Rodriguez de los Santos, M., and J.P. Canavate. 1985. Sélection des proies par le Héron pourpré Ardea purpurea pendant la période de reproduction dans les Marais du Guadalquivir (Espagne). L'oiseau et R.F.O. 55: 195-204.
163. Rodriguez Jiménez, F.L., and E. Balcells. 1968. Notas biológicas sobre el alimoche, Neophron percnopterus, en el Alto Aragón. Publ. Cent. pir. Biol. Exp. 2: 159-187.
164. Rooth, J. 1957. Over het voedsel, de terreinkeus en de achteruitgang van de ooievaar, Ciconia ciconia L., in Nederland. Ardea 45(3-4): 93-116.
165. Rosnoblet, R. 1974. Le faucon pèlegrin prédateur du lézard vert. Nos oiseaux 32(7): 202.
166. Ruiz, X. 1985. An analysis of the diet of cattle egrets in the Ebro Delta, Spain. Ardea 73: 49-60.

167. Salvador, A. 1980. Interaction between the balearic lizard (Podarcis lilfordi) and Eleonora's falcon (Falco eleonorae). J. Herpetol. 14(1): 101.
168. San Miguel Ayanz, A. 1983. Contribución al estudio de la alimentación del arrendajo (Garrulus glandarius L. 1758) en España. Bol. Est. Centr. Ecologia 12(23): 77-81.
169. Schipper, W.J.A. 1973. A comparison of prey selection in sympatric harriers (Circus) in Western Europe. Le Gerfaut 63: 17-120.
170. Schlee, M.A. 1984. Blackbirds eating large food items. British Birds 77(2): 74-75.
171. Schmitz, L. 1985. Consommation de tritons alpestres (Triturus alpestris) par le grebe castagneux (Tachybaptus ruficollis). Aves 22(3): 213.
172. Schrubb, M. 1980. Farming influences on the food and hunting of the kestrels. Bird Study 27(2): 109-115.
173. Simeon, D., and J.L. Wilhelm. 1988. Essai sur l'alimentation annuelle de l'aigle de Bonelli Hieraaetus fasciatus en Provence. Alauda 56(3): 226-237.
174. Smal, C.M. 1987. The diet of the barn owl Tyto alba in Southern Ireland, with reference to a recently introduced prey species - the bank vole Clethrionomys glareolus. Bird Study 34(2): 113-125.
175. Smeenk, C. 1972. Ökologische vergleiche zwischen waldkauz Strix aluco und waldohreule Asio otus. Ardea 60(1-2): 1-71.
176. Straeten, E. Van der, and R. Asselberg. 1973. Het voedsel van de Kerkuil Tyto alba in België. Le Gerfaut 63(1-2): 149-159.
177. Suetens, W., and P. Van Groenendael. 1975. Observaciones en 1975 en un par de nidos extremeños de Elanio azul. Ardeola 22: 113-123.
178. Suetens, W., and P. Van Groenendael. 1977. Nidification de l'elanion blanc (Elanus caeruleus) en Espagne. Le Gerfaut 67(1-2): 54-72.

179. Taylor, D.W. 1976. Greenshank eating large frog. British Birds 69(10): 409.

180. Thiollay, J.M. 1963. Notes sur le régime alimentaire du Faucon crécerelle Falco tinnunculus en hiver. Nos oiseaux 27(2): 71-73.
181. Thiollay, J.M. 1966. Essai sur les rapaces du midi de La France. Distribution-Ecologie. Tentative de dénombrent. Alauda 34(3): 210-227.
182. Thiollay, J.M. 1967. Essai sur les rapaces du midi de La France. Distribution-Ecologie. Tentative de dénombrent. Aigle Royal, Aquila chrysaëtos chrysaëtos (L.). Alauda 35(2): 140-150.
183. Thiollay, J.M. 1968. Essai sur les rapaces du midi de La France. Distribution-Ecologie. Tentative de dénombrent. Circaète Jean le Blanc, Circaëtus gallicus gallicus (Gmelin). Alauda 36(3): 179-189.
184. Thiollay, J.M. 1968. Essai sur les rapaces du midi de La France. Distribution-Ecologie. Tentative de dénombrent. Hibou grand duc, Bubo bubo bubo L. Alauda 37(1): 15-27.
185. Thiollay, J.M. 1968. Le régime alimentaire de nos rapaces: quelques analyses françaises. Nos oiseaux 29(10): 249-269.
186. Triplet, P. 1982. Note sur le cigogne blanche Ciconia ciconia en hiver. L'oiseau et R.F.O. 52(4): 372-373.
187. Turrian, F. 1987. La Bergeronnette grise, Motacilla alba, prédatrice de la grenouille rousse, Rana temporaria. Nos oiseaux 39(3): 137.

188. Uttendoerfen, O. 1952. Documents sur le Faucon crécerelle Falco tinnunculus L. Nos oiseaux 21(9): 217-223.

189. Valverde, J. A. 1956. Essai sur l'aigrette garzette (Egretta g. garzetta) en France. Alauda 24(1): 1-36.
190. Valverde, J. A. 1960. Vertebrados de las Marismas del Guadalquivir. (Introducción a su estudio ecológico). Archiv. Inst. Aclimatación 9: 1-168.
191. Valverde, J.A. 1967. Estructura de una comunidad de Vertebrados terrestres. Monogr. Est. Biol. Doñana 1. C.S.I.C.; Madrid.
192. Vargas, J.M., A. Antúnez, and M. Blasco. 1977. Comportamiento reproductivo y alimentario de la pagaza piconegra (Gelochelidon nilotica) en la laguna de Fuentepiedra de Málaga. Ardeola 24: 227-231.
193. Vargas, J.M., A. Antúnez, and M. Blasco. 1983. Los Vertebrados de la laguna de Fuentepiedra (Málaga). Monogr. I.C.O.N.A. 28. Minist. Agricult.; Madrid.
194. Vargas, J.M., E. Miguel, and M. Blasco. 1980. Estudio estacional y comparativo del régimen alimenticio de Tyto alba Scopoli en Fuentepiedra de Málaga y el Padul de Granada (España). Misc. Zool. 6: 95-102.
195. Vaucher, C.A. 1971. Notes sur l'ethologie de L'Aigle de Bonelli, Hieraetus fasciatus. Nos oiseaux 31(5-6): 101-111.

196. Veiga, J.P. 1978. Alimentación y relaciones tróficas entre la lechuza común (Tyto alba) y el buho chico (Asio otus) en la Sierra de Guadarrama (España). Ardeola 25: 113-142.
197. Veiga, J.P. 1985. Ecología de las rapaces de un ecosistema mediterráneo de montaña. Aproximación a su estructura comunitaria. Tesis Doctoral. Univ. Complutense Madrid.
198. Vericad, J.R., A. Escarré, and E. Rodríguez. 1976. Datos sobre la dieta de Tyto alba y Bubo bubo (SE de Iberia). Mediterránea 1: 47-59.
199. Vermot, M. 1980. Capture et ingurgitation d'un vertebre par une enchasse blanche, Himantopus himantopus. Nos oiseaux 35(6): 289.
200. Village, A. 1982. The diet of kestrels in relation to vole abundance. Bird Study 29(2): 129-138.
201. Villarán, A., and L.T. Medina. 1983. Alimentación del cárabo (Strix aluco L. 1758) en España. Alytes 1(1): 291-306.
202. Voisin, C. 1978. Utilisation des zones humides du Delta Rhodanien par les Ardeides. L'oiseau et R.F.O. 48(4): 329-380.

203. Walters Davies, P., and P.E. Davies. 1973. The ecology and conservation of the red kite in Wales. British Birds 66(6): 241-270.

204. Yalden, D.W. 1985. Dietary separation of owls in the Peak District. Bird Study 32(2): 122-131.
205. Yalden, D.W., and A.B. Warburton. 1979. The diet of the kestrel in the Lake District. Bird Study 26(3): 163-170.

SEX DETERMINATION IN REPTILES: SUMMARY OF EFFECTS OF CONSTANT TEMPERATURES OF INCUBATION ON SEX RATIOS OF OFFSPRING

GARY L. PAUKSTIS
&
FREDRIC J. JANZEN

Department of Ecology and Evolution
University of Chicago

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 83

1990

**SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE**

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with the Division of Amphibians and Reptiles.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions on preparation and submission. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC 20560 USA. Please include a self-addressed mailing label with requests.

INTRODUCTION

The phenomenon of environmental sex determination (ESD) in reptiles has been highly publicized in recent years. However, the underlying mechanism(s) that control this process are still poorly known. Additionally, the distribution of ESD within the Reptilia is poorly known, with only 93 of the approximately 6500 species of extant reptiles having been examined for the presence of ESD (Janzen and Paukstis, Quart. Rev. Biol.).

This paper provides a summary of much of the research conducted on ESD in reptiles from laboratory studies that have employed constant temperatures of incubation (Table 1). Table 1 is an extension of and appendix to a review article on ESD in reptiles (Janzen and Paukstis, Quart. Rev. Biol.). As a result of the recent proliferation of publications concerning various aspects of ESD in reptiles, this table originated as a tool to provide an overview of laboratory results that were currently available. As the data accumulated, we were impressed not by their consistency, but by the amount of variability that existed among different studies. Although each of these studies individually provided important new data on ESD, when many papers were viewed simultaneously it became very difficult to compare results.

The potential sources of this variability in sex ratios among different studies are many but, in general, fall into two broad categories--biological and artifactual. Among biological sources of variability are such factors as inter- and intrapopulational genetic differences, nongenetic maternal influences, and different regulatory mechanisms that may vary taxonomically within the Reptilia. Artifacts (nonbiological and experimental) include differences in experimental design and implementation (e.g., how closely temperature was monitored or regulated, randomization of eggs across experimental treatments, small sample sizes) and different techniques in sexing hatchlings (e.g., presence/absence of oviducts, histological confirmation).

Another factor that may reduce the value of results from some studies is the manner in which the results are presented (e.g., actual sample sizes as opposed to just the sex ratios of hatchlings, data on embryonic mortality). An additional problem is inconsistency and lack of definition of terminology. For example, what is the actual relationship between the morphology of a given gonad and the terminology used to describe it in hatchlings from different studies, when these hatchlings have been described as "hermaphrodites", "intersexes", "unsexable", or "unsexed"? Even though the answer to this question may be obvious, unless the terminology in each of these papers has been adequately defined, it is difficult to ascertain precisely how the gonads of these hatchlings may or may not differ. To properly understand ESD in reptiles, it is very important to differentiate between these biological and artificial/experimental sources of variation and to strive to minimize those sources of variation that may mask actual biological effects.

In this paper we provide a compilation of much of the published empirical research on ESD in reptiles. Specifically, we summarize information on incubation temperatures, sex ratios, and sample sizes from laboratory studies that have used constant temperatures of incubation. Comments are provided in those instances where they may lend insight into variability of sex ratios or to denote information that may be of particular interest. The arrangement of the major taxa used in Table 1 follows that of Janzen and Paukstis (Quart. Rev. Biol.). Families are listed alphabetically within the major taxa and genera are presented alphabetically within families.

We thank E. D. Brodie, III, L. E. Brown, J. J. Bull, S. O'Steen, P. A. Verrell, and M. J. Wade for support and discussion during the preparation of this manuscript. This work has been supported in part by an NIH Pre-Doctoral Training Grant in Genetics and Regulation (GM-07197) and by an NSF Doctoral Dissertation Improvement Grant (BSR-8914686) to FJJ.

Table 1. SUMMARY OF OFFSPRING SEX RATIOS FROM STUDIES USING CONSTANT TEMPERATURES OF INCUBATION

The number of males and females presented in this table were, in some cases, calculated from percentages provided in the sources indicated. In other cases, percentages were calculated from sample sizes. Question marks (?) denote data that were not presented in the source.

Taxa	Temp (C)	Males # ♂♂ (%)	Females # ♀♀ (%)	# eggs/# clutches	Comments	Source
TESTUDINES						
CRYPTODIRA						
CARETTOCHELYIDAE						
Carettochelys insculpta						
	28	12(100)	0(0)	12/3	Eggs in 2nd group at	98
	30	20(100)	0(0)	24/5	32° were collected	
	32	0(0)	9(100)	12/3	late in development	
	32	23(50)	23(50)	46/5		
CHELONIIDAE						
Caretta caretta						
	26	20(100)	0(0)	20/5	89% hatching success	38
	32	0(0)	20(100)	20/5	83% hatching success	
	25	?(100)	0(0)	10/1		53
	26	?(100)	0(0)	10/1		
	27.5	?(80)	?(20)	10/1		
	29	?(50)	?(50)	10/1		
	30.5	0(0)	?(100)	10/1		
	32	0(0)	?(100)	10/1		
	25	8(100)	0(0)	10/1	2 unsexable	54
	25	7(100)	0(0)	10/1		
	26	16(100)	0(0)	16/2		
	26	6(67)	3(33)	10/1		
	26	10(100)	0(0)	10/1		
	26	7(88)	1(12)	10/1	1 unsexable	
	27	8(80)	2(20)	10/1		
	27	6(86)	1(14)	10/1	2 unsexable	
	27.5	5(56)	4(44)	10/1		
	27.5	3(30)	7(70)	10/1		
	27.5	8(80)	2(20)	10/1		
	28	4(44)	5(56)	10/1		
	28	2(100)	0(0)	10/1		
	29	1(11)	8(89)	10/1		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	29	5(56)	4(44)	10/1		
	29	2(20)	8(80)	10/1		
	29	5(50)	5(50)	10/1		
	29	6(60)	4(40)	10/1		
	30	0(0)	7(100)	10/1		
	30	3(33)	6(67)	10/1		
	30	2(20)	8(80)	10/1		
	30.5	0(0)	1(100)	1/1		
	30.5	2(33)	4(67)	7/1		
	30.5	0(0)	10(100)	10/1		
	31	0(0)	8(100)	10/1	1 unsexable	
	31	0(0)	16(100)	20/2		
	32	0(0)	19(100)	20/2		
	32	0(0)	6(100)	10/1	1 unsexable	
	27.5	6(86)	1(14)	?/2	North Carolina (NC)	62
	28.0	26(90)	3(10)	?/2	NC	
	28.5	22(69)	10(31)	?/2	NC	
	28.5	9(33)	18(67)	?/2	Georgia (GA)	
	28.5	25(74)	9(26)	?/2	Florida (FL)	
	28.8	19(79)	5(21)	?/2	NC	
	28.8	12(34)	23(66)	?/2	GA	
	28.8	22(65)	12(35)	?/2	FL	
	29.2	4(50)	4(50)	?/2	NC	
	29.5	8(33)	16(67)	?/2	NC	
	29.5	8(20)	31(78)	?/2	GA; 1 intersex	
	29.5	12(35)	25(65)	?/2	FL	
	30.0	3(37)	5(63)	?/2	NC	
	30.4	0(0)	25(100)	?/2	GA	
	30.4	2(5)	36(92)	?/2	FL; 1 intersex	
	30.5	0(0)	23(100)	?/2	NC	
	24	11(100)	0(0)	23/3		104,105, 106
	26	24(100)	0(0)	26/5		
	28	20(100)	0(0)	26/5		
	30	5(36)	9(64)	15/1	Incubated in 1978	
	30	5(56)	4(44)	15/2	Incubated in 1979	
	30	4(80)	1(20)	6/2	Incubated in 1980	
	32	0(0)	21(100)	26/5		
	34	0(0)	7(100)	26/5		
Chelonia mydas						
	26	16(84)	0(0)	20/1	3 intersexes	57
	29	0(0)	37(90)	41/1	4 intersexes	
	33	0(0)	12(86)	20/1	2 intersexes	
	27.75	19(68)	6(21)	38/3	3 intersexes	63
	28.1	17(61)	10(36)	37/3	1 intersex	
	29.25	11(35)	18(58)	38/3	2 intersexes	
	30.0	9(43)	11(52)	37/3	1 intersex	

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	27.5	587(~44)	763(~56)	?/?	Numbers for each	100
	27.5	1178(~27)	3181(~73)	?/?	sex are estimates	
	27.5	23(~77)	7(~23)	?/?	owing to imprecision	
	27.5	1572(~67)	786(~33)	?/?	in sex ratios given	
	27.5	237(~67)	118(~33)	?/?		
	30.0	97(~ 1)	13661(~99)	?/?		
Lepidochelys olivacea						
	26.5	?(100)	0(0)	?/1		24
	29.5	0(0)	?(100)	?/1		
	31.5	0(0)	?(100)	?/1		
	25	23(100)	0(0)	50/3		56
	28	30(88)	1(3)	50/3	3 unsexable	
	30	12(48)	8(32)	50/3	5 unsexable	
	32	0(0)	23(100)	50/3		
	26.5	?(100)	0(0)	?/>1		60
	28.0	?(100)	0(0)	?/>1		
	29.5	?(40)	?(60)	?/>1		
	30.0	0(0)	?(100)	?/>1		
	31.0	0(0)	?(100)	?/>1		
	31.5	0(0)	?(100)	?/>1		
	27.5	?(100)	0(0)	?/?		61
	29.5	?(?)	?(?)	?/?	Both sexes produced	
	31.5	0(0)	?(100)	?/?		
	25.7	160(98)	1(1)	?/9	3 intersexes	84
	~27.4	59(98)	1(2)	?/3		
CHELYDRIDAE						
Chelydra serpentina						
	25	10(100)	0(0)	10/?		21
	30	0(0)	11(100)	11/?		
	28.5	?(?)	?(?)	?/?	Both sexes produced	22
	31	0(0)	4(80)	5/?	1 intersex	
	26.0	7(88)	1(12)	?/2	44 eggs incubated	23
	28.5	3(23)	10(77)	?/2	in total for this	
	31.0	0(0)	13(100)	?/2	experiment	
	21.5	2(25)	6(75)	?/?	Indiana	28
	21.5	0(0)	3(100)	?/?	Tennessee	
	22.5	5(50)	5(50)	?/?	Indiana	
	22.5	32(94)	2(6)	?/?	Minnesota	
	25	33(92)	3(8)	36/?		33
	31	0(0)	33(100)	33/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	26	36(95)	2(5)	?/?		34
	23	54(100)	0(0)	54/9		42,43
	26	50(100)	0(0)	50/9		
	29	0(0)	63(100)	63/15		69
	20	0(0)	21(100)	85/5	Eggs in the two 20° treatments were switched to 26° after 88 days and 83 days, respectively	102
	20	0(0)	37(100)	66/2		
	22	19(90)	2(10)	21/3		
	24	18(100)	0(0)	18/3		
	26	108(100)	0(0)	132/16		
	26	79(98)	2(2)	91/7		
	28	17(65)	9(35)	27/3		
	30	0(0)	5(100)	23/5		
	30	0(0)	48(100)	72/6		
	30	0(0)	34(100)	56/5		
	20	0(0)	149(100)	245/?	Eggs in the 20° treatment completed incubation at 26°	103
	26	373(99)	3(1)	431/?		
	30	0(0)	142(100)	196/?		
Macroclemys temmincki						
	25	?(60)	?(40)	?/?		6
	31	0(0)	?(100)	?/?		
	22.5	2(11)	16(89)	?/?		28
	25	9(69)	4(31)	?/?		
	27	10(71)	4(29)	?/?		
	30	0(0)	11(100)	?/?		
DERMOCHELYIDAE						
Dermochelys coriacea						
	27.4	50(100)	0(0)	50/5	Temps measured every 2-5 days at 0700 &1800	25
	28.1	50(100)	0(0)	50/5		
	27	?(100)	0(0)	~25/1		52
	~28	?(100)	0(0)	~25/1		
	~29	?(100)	0(0)	~25/1		
	31	0(0)	40(100)	40/?		
	27	33(100)	0(0)	75/2		79
	27.25	5(100)	0(0)	11/1		
	28	4(100)	0(0)	38/2		
	28.25	1(100)	0(0)	10/1		
	28.75	15(100)	0(0)	51/2		
	29.75	0(0)	4(100)	11/1		
	30.5	0(0)	18(100)	59/3		
	32	0(0)	3(100)	35/2		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	29.25	9(100)	0(0)	140/4		80
	29.5	1(25)	3(75)	16/1		
	29.5	12(86)	2(14)	16/1		
	29.75	0(0)	32(100)	68/2		
EMYDIDAE						
Batagurinae						
Chinemys reevesii						
	~25	18(100)	0(0)	25/?		40
	32	0(0)	12(92)	25/?	1 intersex	
Mauremys mutica						
	25	3(75)	1(25)	?/?		28
	30	0(0)	9(100)	?/?		
Melanochelys trijuga						
	23.8	0(0)	2(100)	?/?		28
	25	7(23)	23(77)	?/?		
	27	15(56)	12(44)	?/?		
	30	1(3)	31(97)	?/?		
Rhinoclemmys areolata						
	25	6(100)	0(0)	?/?		28
	30	0(0)	6(100)	?/?		
Rhinoclemmys pulcherrima						
	25	14(100)	0(0)	?/?		28
	30	2(25)	6(75)	?/?		
Emydinae						
Chrysemys picta						
	25	81(100)	0(0)	102/?		11
	30.5	0(0)	81(100)	101/?		
	28.0	1(2)	40(98)	41/>10	Tennessee (TN)	13
	28.0	92(98)	2(2)	94/>25	Wisconsin (WI)	
	28.3	1(9)	10(91)	11/>10	TN	
	29.0	0(0)	12(100)	12/>10	TN	
	29.0	24(63)	14(37)	38/>25	WI	
	29.5	0(0)	5(100)	5/>10	TN	
	29.5	0(0)	7(100)	7/>25	WI	
	30.0	0(0)	16(100)	16/>10	TN	
	30.0	0(0)	56(100)	56/>25	WI	
	30.6	0(0)	14(100)	14/>10	TN	
	30.6	0(0)	22(100)	22/>25	WI	
	28.5	0(0)	?(100)	?/?		22
	31	0(0)	?(100)	?/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	26.0	7(100)	0(0)	?/7		23
	28.5	0(0)	16(100)	?/7		
	31.0	0(0)	18(100)	?/7		
	21.5	102(100)	0(0)	?/?	some feminization	28
	22.5	10(100)	0(0)	?/?		
	25	83(100)	0(0)	?/?		
	27	33(100)	0(0)	?/?		
	30	0(0)	78(100)	?/?		
	25	23(100)	0(0)	23/?		33
	31	0(0)	28(100)	28/?		
	26.5	19(100)	0(0)	19/?		36
	26.5	28(80)	7(20)	35/?		
	27	21(100)	0(0)	30/?	9 unsexable	
	27	6(43)	8(57)	18/?	4 unsexable	
	28.5	4(19)	17(81)	21/?		
	28.5	3(14)	18(86)	21/?		
	28.5	7(78)	2(22)	9/?		
	28.5	6(75)	2(25)	8/?		
	30.5	0(0)	37(100)	37/?		
	32	0(0)	14(100)	15/?	1 unsexable	
	22	6(35)	11(65)	40/21	1 unsexable	37
	27	21(100)	0(0)	31/21	9 unsexable	
	32	0(0)	14(100)	31/21	1 unsexable	
	25.7	41(100)	0(0)	45/24	-150 and -1100 kPa	68
	26.7	38(100)	0(0)	45/24	-150 and -1100 kPa	
	27.7	29(100)	0(0)	45/24	-150 and -1100 kPa	
	28.7	13(68)	6(32)	21/12	-150 kPa	
	28.7	7(50)	6(43)	24/12	-1100 kPa, 1 intersex	
	20	3(50)	3(50)	21/19		83
	22	14(100)	0(0)	20/19		
	24	17(100)	0(0)	21/19		
	26	18(100)	0(0)	21/19		
	28	3(19)	13(81)	21/19		
	30	0(0)	19(100)	21/19		
	32	0(0)	17(100)	21/19		
Clemmys guttata						
	22.5	10(91)	1(9)	?/?		28
	25	14(70)	6(30)	?/?		
	27	12(92)	1(8)	?/?		
	30	0(0)	19(100)	?/?		
Clemmys insculpta						
	25	6(33)	12(67)	18/6		10
	30	7(39)	11(61)	18/6		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	22.5	15(44)	19(56)	?/?		28
	25	19(44)	24(56)	?/?		
	27	15(44)	19(56)	?/?		
	30	24(53)	21(47)	?/?		
Clemmys muhlenbergii						
	25	1(33)	2(67)	?/?		28
Deirochelys reticularia						
	25	16(100)	0(0)	?/?		28
	30	2(11)	17(89)	?/?		
Emydoidea blandingii						
	22.5	40(100)	0(0)	?/?		28
	25	57(97)	2(3)	?/?		
	30	0(0)	63(100)	?/?		
	26.5	10(100)	0(0)	?/6		35
	31.0	0(0)	10(100)	?/6		
Emys orbicularis						
	30	1(4)	23(96)	24/?		71
	25	40(100)	0(0)	40/?		72
	29.5	0(0)	11(100)	11/?		
	27.5	25(100)	0(0)	25/?		73
	25	76(100)	0(0)	76/?		74
	27.5	25(100)	0(0)	25/?		
	29.5	0(0)	117(100)	117/?		
	27.75	30(100)	0(0)	30/?		75
	28.25	19(95)	1(5)	20/?		
	28.75	8(42)	11(58)	19/?		
	29.25	1(3)	29(94)	31/?	1 intersex	
	27.75	23(77)	0(0)	30/?	7 intersexes	76
	28.25	20(54)	4(11)	37/?	13 intersexes	
	28.75	6(18)	13(39)	33/?	14 intersexes	
	29.25	0(0)	29(94)	31/?	2 intersexes	
	29.75	0(0)	54(100)	54/?		
	18	8(100)	0(0)	8/?		77
	19.5	6(100)	0(0)	6/?		
	35	0(0)	10(100)	10/?		
	25.5	149(100)	0(0)	149/?		107
	28.75	6(16)	30(81)	37/?	1 intersex	
	30.25	0(0)	127(100)	127/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	28.5	1(11)	8(89)	9/1		108
	28.5	0(0)	10(100)	10/1		
	28.5	0(0)	5(63)	8/1	3 intersexes	
	28.5	4(80)	1(20)	6/1	1 embryo died	
	28.5	4(67)	1(17)	6/1	1 intersex	
	28.5	4(44)	1(11)	9/1	4 intersexes	
	28.5	2(18)	9(82)	11/1		
	28.5	1(14)	6(86)	7/1		
	28.5	5(83)	1(17)	7/1	1 egg unfertilized	
	28.5	1(10)	6(60)	10/1	3 intersexes	
Graptemys barbouri						
	25	9(100)	0(0)	?/?		28
	30	0(0)	9(100)	?/?		
Graptemys geographica						
	25	98(100)	0(0)	122/?		11
	30.5	0(0)	88(100)	119/?		
	28.0	26(100)	0(0)	26/7		13
	29.0	2(33)	4(67)	6/7		
	30.0	0(0)	28(100)	28/7		
	22.5	14(100)	0(0)	?/?		28
	25	33(100)	0(0)	?/?		
	27	22(100)	0(0)	?/?		
	30	0(0)	44(100)	?/?		
	33	0(0)	3(100)	?/?		
Graptemys kohnii						
	25	151(100)	0(0)	?/?		28
	30	0(0)	153(100)	?/?		
Graptemys nigrinoda						
	25	6(100)	0(0)	?/?		28
	30	0(0)	7(100)	?/?		
Graptemys ouachitensis						
	25	210(100)	0(0)	233/?		11
	30.5	0(0)	211(100)	237/?		
	29.25	3(30)	7(70)	10/1		12
	29.25	7(78)	2(22)	10/1		
	29.25	4(40)	6(60)	10/1		
	29.25	4(50)	3(38)	10/1	1 intersex	
	29.25	2(22)	7(78)	10/1		
	29.25	5(50)	4(40)	10/1	1 intersex	
	29.25	0(0)	9(100)	10/1		
	29.25	7(78)	2(22)	10/1		
	29.25	0(0)	10(100)	10/1		
	29.25	1(10)	9(90)	10/1		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	29.25	9(90)	0(0)	10/1	1 intersex	
	29.25	2(22)	7(78)	10/1		
	29.25	3(30)	7(70)	10/1		
	29.25	4(44)	5(56)	10/1		
	29.25	10(100)	0(0)	10/1		
	29.25	4(40)	6(60)	10/1		
	29.25	4(40)	5(50)	10/1	1 intersex	
	29.25	1(10)	9(90)	10/1		
	29.25	3(30)	6(60)	10/1	1 intersex	
	29.25	5(50)	5(50)	10/1		
	28.0	93(100)	0(0)	93/>25		13
	29.0	53(83)	11(17)	64/>25		
	30.0	1(1)	88(99)	89/>25		
	25	69(100)	0(0)	?/?		28
	30	0(0)	64(100)	?/?		
Graptemys pseudogeographica						
	25	173(100)	0(0)	222/?		11
	30.5	4(3)	147(97)	232/?		
	28.0	7(100)	0(0)	7/7	Tennessee (TN)	13
	28.0	70(100)	0(0)	70/9	Wisconsin (WI)	
	28.3	24(96)	1(4)	25/7	TN	
	28.3	14(100)	0(0)	14/9	WI	
	29.0	0(0)	5(100)	5/7	TN	
	29.0	22(92)	2(8)	24/9	WI	
	29.3	13(28)	34(72)	47/7	TN	
	29.3	33(58)	24(42)	57/9	WI	
	29.5	4(16)	21(84)	25/7	TN	
	29.5	5(33)	10(67)	15/9	WI	
	30.0	0(0)	5(100)	5/7	TN	
	30.0	9(11)	73(89)	82/9	WI	
	30.6	0(0)	22(100)	22/7	TN	
	30.6	0(0)	17(100)	17/9	WI	
	22.5	11(100)	0(0)	?/?		28
	25	16(100)	0(0)	?/?		
	30	0(0)	14(100)	?/?		
	33	0(0)	11(100)	?/?		
	25	54(100)	0(0)	66/17	Eggs from *ouachitensis*	92
	35	0(0)	17(100)	70/17	and *pseudogeographica*	
Graptemys pulchra						
	28.0	17(100)	0(0)	17/>10		13
	29.0	0(0)	4(100)	4/>10		
	30.0	0(0)	14(100)	14/>10		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
Malaclemys terrapin						
	24	20(100)	0(0)	?/?		28
	30	0(0)	34(100)	?/?		
	27	2(67)	1(33)	7/1	1972	82
	27	35(100)	0(0)	63/9	1973-1975	
	27	7(88)	1(12)	8/1	1977	
	27	8(100)	0(0)	9/1	1977	
Pseudemys concinna						
	22.5	13(100)	0(0)	?/?		28
	25	52(91)	5(9)	?/?		
	30	0(0)	55(100)	?/?		
Pseudemys floridana						
	25	4(100)	0(0)	?/?		28
	30	0(0)	4(100)	?/?		
Terrapene carolina						
	26.0	3(50)	3(50)	?/5		23
	28.5	2(40)	3(60)	?/5		
	31.0	1(14)	6(86)	?/5		
	21.5	13(93)	1(7)	?/?		28
	22.5	24(73)	9(27)	?/?		
	25	73(96)	3(4)	?/?		
	27	25(81)	6(19)	?/?		
	30	0(0)	84(100)	?/?		
Terrapene ornata						
	21.5	1(100)	0(0)	?/?		28
	22.5	14(100)	0(0)	?/?		
	25	8(100)	0(0)	?/?		
	29	0(0)	28(100)	31/9	2 unsexed	70
Trachemys scripta						
	28.0	21(100)	0(0)	21/>10	Alabama (AL)	13
	28.3	33(92)	3(8)	36/>10	Tennessee (TN)	
	29.0	6(38)	10(62)	16/>10	AL	
	29.5	12(30)	28(70)	40/>10	TN	
	30.0	0(0)	17(100)	17/>10	AL	
	30.6	2(5)	40(95)	42/>10	TN	
	21.5	3(100)	0(0)	?/?		28
	22.5	23(100)	0(0)	?/?		
	25	21(100)	0(0)	?/?		
	27	3(100)	0(0)	?/?		
	30	0(0)	20(100)	?/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
KINOSTERNIDAE						
Kinosternon flavescens						
	25	5(33)	10(67)	?/?		28
	27	13(93)	1(7)	?/?		
	30	10(91)	1(9)	?/?		
	32	0(0)	8(100)	?/?		
	25	11(79)	3(21)	29/10		94
	31	0(0)	16(100)	27/10		
	25	?(79)	?(21)	?/?	*K. flavescens*?	6
	31	0(0)	?(100)	?/?		
Kinosternon leucostomum						
	22.5	1 or 2(19)	6 or 7(81)	?/?		28
	24	1(100)	0(0)	?/?		
	25	3(75)	1(25)	?/?		
	27	0(0)	6(100)	?/?		
	30	0(0)	9(100)	?/?		
Kinosternon scorpioides						
	22.5	8(22)	14(78)	?/?		28
	24	25(82)	6(18)	?/?		
	25	53(81)	12(19)	?/?		
	27	23(70)	10(30)	?/?		
	30	0(0)	73(100)	?/?		
Kinosternon subrubrum						
	22.5	1(17)	5(83)	?/?		28
Sternotherus carinatus						
	22.5	0(0)	5(100)	?/?		28
	25	1(20)	4(80)	?/?		
	27	6(100)	0(0)	?/?		
	30	0(0)	6(100)	?/?		
Sternotherus minor						
	22.5	1(4)	27(96)	?/?		28
	24	1(8)	11(92)	?/?		
	25	22(76)	7(24)	?/?		
	27	1(6)	17(94)	?/?		
	30	0(0)	36(100)	?/?		
	32	0(0)	3(100)	?/?		
Sternotherus odoratus						
	21.5	0(0)	14(100)	?/?		28
	22.5	0(0)	59(100)	?/?		
	23.8	8(31)	18(69)	?/?		
	25	46(94)	3(6)	?/?		
	27	6(23)	20(77)	?/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	30	0(0)	51(100)	?/?		
	23.5	6(19)	26(81)	34/20		94
	25	27(82)	6(18)	34/20		
	28	2(3)	68(97)	92/58		
	29.5	2(3)	56(97)	58/38		
	30.5	1(2)	40(98)	69/58		
STAUROTYPIDAE						
Staurotypus salvinii						
	22.5	1(25)	4(75)	?/?	from 1 female	28
	22.5	18(100)	0(0)	?/?	from 3 females	
	25	8(53)	7(47)	?/?	from 1 female	
	25	19(100)	0(0)	?/?	from 3 females	
	27	3(60)	2(40)	?/?	from 1 female	
	27	14(100)	0(0)	?/?	from 3 females	
	30	3(33)	6(67)	?/?	from 1 female	
	30	7(78)	2(22)	?/?	from 3 females	
Staurotypus triporcatus						
	22.5	11(44)	14(56)	?/?		28
	25	17(55)	14(45)	?/?		
	27	12(40)	18(60)	?/?		
	30	8(53)	7(47)	?/?		
TESTUDINIDAE						
Testudo graeca						
	26.5	19(100)	0(0)	19/?		71
	30	22(96)	1(4)	23/?		
	31	0(0)	20(100)	20/?		72
	33	0(0)	20(100)	20/?		
	26.5	19(100)	0(0)	19/?		74
	29.5	37(97)	1(3)	38/?		
	31.5	0(0)	16(100)	16/?		
Testudo hermanni						
	~23.5	6(100)	0(0)	6/1		26
TRIONYCHIDAE						
Trionyx muticus						
	27	23(44)	29(56)	?/?		28
	30	26(49)	27(51)	?/?		
	33	30(54)	25(46)	?/?		
Trionyx spiniferus						
	31	7(50)	7(50)	51/?		9

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	25	33(49)	34(51)	83/?		11
	30.5	27(53)	24(47)	86/?		
	23	7(41)	10(59)	68/?	51 unsexed	93
	25	34(49)	35(51)	86/?	17 unsexed	
	28	29(52)	27(48)	69/?	13 unsexed	
	30.5	28(53)	25(47)	89/?	36 unsexed	
	33	21(41)	30(59)	66/?	15 unsexed	
PLEURODIRA						
CHELIDAE						
Chelodina longicollis						
	24	7(35)	13(65)	25/15	5 unsexed	31
	26	4(36)	7(64)	13/13	2 unsexed	
	28	4(31)	9(69)	13/13		
	30	6(35)	11(65)	18/15	1 unsexed	
	32	14(64)	11(36)	27/15	1 unsexed	
Emydura macquarii						
	20	1(33)	2(67)	6/1	Eggs at 20° were	85,86
	~25	13(65)	7(35)	24/8	switched to 30°	
	26	7(37)	12(63)	24/8	after 91 days	
	28	10(50)	10(50)	24/8		
	30	18(78)	5(22)	24/8		
	30	58(52)	53(48)	?/?		
	32	10(56)	8(44)	24/8		
Emydura signata						
	25	15(45)	18(55)	33/12		10
	28	3(25)	9(75)	12/12		
	30	13(65)	7(35)	20/12		
PELOMEDUSIDAE						
Pelomedusa subrufa						
	24	0(0)	2(100)	?/?		28
	25	0(0)	11(100)	?/?		
	27	0(0)	17(100)	?/?		
	30	12(71)	5(29)	?/?		
	33	0(0)	9(100)	?/?		
Pelusios castaneus						
	25	0(0)	11(100)	?/?		28
	27	0(0)	3(100)	?/?		
	30	14(82)	3(18)	?/?		
	33	0(0)	5(100)	?/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
CROCODYLIA						
ALLIGATORIDAE						
Alligator mississippiensis						
	32	12(100)	0(0)	46/?		9
	26	0(0)	10(100)	50/13		29,30
	28	0(0)	96(100)	100/13		
	30	0(0)	97(100)	100/13		
	32	13(13)	85(87)	100/13		
	34	94(100)	0(0)	100/13		
	36	7(100)	0(0)	50/13		
	29.4	0(0)	90(100)	113/11		44,45
	30.6	13(41)	19(59)	42/11		
	31.7	41(75)	14(25)	67/11		
	32.8	111(99)	1(1)	135/11		
	30	0(0)	?(100)	?/?		48
Caiman crocodilus						
	28.5	0(0)	?(100)	?/?		49
	~28.9	0(0)	?(100)	?/?		
	~30.1	0(0)	?(100)	?/?		
	~30.9	0(0)	?(100)	?/?		
	~31.4	?(~60)	?(~40)	?/?		
	~31.9	?(100)	0(0)	?/?		
	~32.3	?(100)	0(0)	?/?		
	33.0	?(100)	0(0)	?/?		
	33.5	?(100)	0(0)	?/?		
Paleosuchus trigonatus						
	≤31	0(0)	?(100)	?/?		101
	32	?(100)	0(0)	?/?		
CROCODYLIDAE						
Crocodylus johnsoni						
	28.0	0(0)	4(100)	?/?	Incubation method A	96
	29.0	0(0)	31(100)	?/?	A & B	
	30.0	0(0)	48(100)	?/?	A & B	
	31.0	0(0)	9(100)	?/?	A	
	31.0	2(13)	14(87)	?/?	B	
	31.5	7(23)	24(77)	?/?	B	
	31.7	5(25)	15(75)	?/?	A	
	32.0	4(31)	9(69)	?/?	A	
	32.0	0(0)	14(100)	?/?	B	
	32.5	6(23)	20(77)	?/?	A	
	32.5	0(0)	6(100)	?/?	B	
	33.0	0(0)	27(100)	?/?	A & B	

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	34.0	0(0)	9(100)	?/?	A	
	26	0(0)	12(100)	122/?		97
	27.9	0(0)	15(100)	44/?		
	29.9	0(0)	48(100)	70/?		
	30	5(19)	21(81)	41/?	1 clutch gave 12 females, 2 dead	
	30	1(1)	123(99)	176/?	The male was deformed	
	31.1	3(13)	20(87)	28/?		
	31.7	0(0)	5(100)	6/?		
	32.0	0(0)	13(100)	26/?		
	32.0	6(30)	14(70)	33/?		
	34	0(0)	41(100)	131/?	Most dead	
	32	5(29)	12(71)	?/?		99
	33	5(20)	20(80)	?/?		
Crocodylus niloticus						
	27.83	0(0)	82(100)	98/9		41
	30.96	0(0)	94(100)	118/10		
	32.5	10(91)	1(9)	18/1		
	33.83	53(100)	0(0)	60/6		
	33.83	9(82)	2(18)	18/1		
	33.83	6(75)	2(25)	8/1		
	33.83	11(85)	2(15)	13/1		
	33.83	3(33)	6(67)	13/1		
Crocodylus palustris						
	28	0(0)	27(100)	?/6	>90% hatching in all treatments except for 33.5° and 34°	49
	28.5	0(0)	35(100)	?/4		
	29	0(0)	32(100)	?/6		
	29.5	0(0)	22(100)	?/4		
	30	0(0)	46(100)	?/8		
	30.5	0(0)	17(100)	?/3		
	31	0(0)	51(100)	?/6		
	31.5	2(22)	7(78)	?/1		
	32	7(70)	3(30)	?/1		
	32	2(25)	6(75)	?/1		
	32	9(69)	4(31)	?/1		
	32	1(100)	0(0)	?/1		
	32.5	8(100)	0(0)	?/1		
	33	3(21)	11(79)	?/1		
	33	3(75)	1(25)	?/1		
	33	3(27)	8(73)	?/1		
	33.5	0(0)	0(0)	19/?		
	34	0(0)	0(0)	4/?		
Crocodylus porosus						
	30	0(0)	?(100)	?/?		46
	32	?(100)	0(0)	?/?		
	28.0	0(0)	4(100)	?/?	Incubation method A	96

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	29.0	0(0)	26(100)	?/?	B	
	30.0	0(0)	70(100)	?/?	A & B	
	31.0	1(50)	1(50)	?/?	A	
	31.0	2(12)	15(88)	?/?	B	
	32.0	10(91)	1(9)	?/?	A	
	32.0	52(85)	9(15)	?/?	B	
	33.0	4(100)	0(0)	?/?	A	
	33.0	1(4)	25(96)	?/?	B	
Crocodylus siamensis						
	28	0(0)	?(100)	?/?		47
	32.5	?(100)	0(0)	?/?		
	27.75	0(0)	11(100)	11/1		48
	33.0	14(100)	0(0)	14/1		
SQUAMATA						
LACERTILIA						
AGAMIDAE						
Agama agama						
	26.5	1(2)	45(98)	?/?		19
	29	30(100)	0(0)	?/?		
Agama caucasia						
	27	21(72)	8(28)	44/5		50
	28	19(95)	1(5)	20/2		
ANGUIDAE						
Elgaria multicarinatus						
	27.5	?(>50)	?(<50)	?/?		51
GEKKONIDAE						
Eublepharis macularius						
	26	0(0)	20(100)	20/?		7,8
	32.5	24(80)	6(20)	30/?		
	29.5	?(50)	?(50)	?/?		8
	31.5	16(84)	3(16)	19/?		9
	31.5	13(93)	1(7)	24/?		
	26.7	?(0)	?(100)	?/?		58
	32.2	?(100)	?(0)	?/?		
	27	?(<<50)	?(>>50)	?/?		87

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	24	0(0)	7(100)	10/?		95
	27.85	1(2)	44(98)	59/?		
	32.7	14(88)	2(12)	18/?		
Gekko japonicus						
	20	0(0)	0(0)	20/?		88,89,90
	24	1(7)	13(93)	26/?		
	26	4(22)	19(78)	?/?		
	28	15(75)	5(25)	30/?		
	30	4(22)	19(78)	?/?		
	32	5(24)	16(76)	35/?		
Hemitheconyx caudicinctus						
	28.6	?(0)	?(100)	?/?		1
	31.7	?(100)	?(0)	?/?		
	26.7	?(0)	?(100)	?/?		58
	32.2	?(100)	?(0)	?/?		
	??	0(0)	?(100)	?/?		95
Tarentola boettgeri						
	28.5	0(0)	23(100)	?/?		65
Tarentola mauritanica						
	28.5	0(0)	33(100)	?/?		65
IGUANIDAE						
Anolis carolinensis						
	24	?(~50)	?(~50)	?/?		91
	25	?(~50)	?(~50)	?/?		
	27	?(~50)	?(~50)	?/?		
	28	?(~50)	?(~50)	?/?		
	30	?(~50)	?(~50)	?/?		
	32	?(~50)	?(~50)	?/?		
	34	?(~50)	?(~50)	?/?		
Dipsosaurus dorsalis						
	28	1(50)	1(50)	11/?		64
	30	6(35)	11(65)	22/?		
	32	6(46)	7(54)	16/?		
	34	12(75)	4(25)	21/?		
	35	0(0)	4(100)	4/?		
	36	38(49)	41(51)	94/?		
	38	7(32)	15(68)	22/?		
	40	0(0)	3(100)	4/?		
Sceloporus jarrovi						
	26	14(37)	24(63)	?/?		3
	28	28(70)	12(30)	?/?		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	30	40(50)	40(50)	?/?		
	32	51(49)	53(51)	?/?		
	34	46(46)	54(54)	?/?		
	36	34(65)	18(35)	?/?		
Sceloporus undulatus						
	30	19(53)	17(47)	37/8		81
	24	?(~50)	?(~50)	?/?		91
	25	?(~50)	?(~50)	?/?		
	27	?(~50)	?(~50)	?/?		
	28	?(~50)	?(~50)	?/?		
	30	?(~50)	?(~50)	?/?		
	32	?(~50)	?(~50)	?/?		
	34	?(~50)	?(~50)	?/?		
LACERTIDAE						
Lacerta viridis						
	29	?(~50)	?(~50)	?/?		27
	17.5	6(67)	3(33)	23/~3	First 5-7 days at 25 C	78
	19.5	4(57)	3(43)	24/~3	First 13 days at 25 C	
	35.5	11(55)	9(45)	?/3	First 5-6 days at 25 C	
	35.5	4(33)	8(67)	?/2	First 13-14 days at 25 C	
Podarcis pityusensis						
	29	?(~8)	?(~92)	?/?	97% hatch success	27
TEIIDAE						
Cnemidophorus inornatus						
	25	12(55)	10(45)	22/?		20
	30	10(50)	10(50)	20/?		
Cnemidophorus uniparens						
	25	0(0)	78(100)	78/?	parthenogenetic	20
	26	0(0)	32(100)	32/?		
	29	0(0)	52(100)	52/?		
	30	0(0)	38(100)	38/?		
	31	0(0)	44(100)	44/?		
	33	0(0)	0(0)	5/?		
SERPENTES						
COLUBRIDAE						
Boiga dendrophila						
	29.25	4(50)	4(50)	9/1		2
	30	3(60)	2(40)	7/1		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
Cemophora coccinea						
	25	5(71)	2(29)	7/1		5
Clelia clelia						
	27	6(67)	3(33)	10/1		55
Coluber constrictor						
	26.5	7(78)	2(22)	14/1		32
Nerodia fasciata						
	21.65	99(55)	81(45)	?/10		67
	26.4	135(48)	144(52)	?/12		
	30.0	101(46)	119(54)	?/11		
Pituophis melanoleucus						
	21	1(11)	8(89)	19/?	Moved to 23° after 70 days	14
	23	20(35)	37(65)	73/?	Sexed embryos excluded	
	23	24(41)	35(59)	66/?		
	26	17(46)	20(54)	43/?		
	28	34(50)	34(50)	73/?		
	28	47(49)	49(51)	97/?		
	30	18(47)	20(53)	39/?		
	32	28(58)	20(42)	62/?		
	33	31(55)	25(45)	64/?		
Xenocalamus bicolor						
	31	2(50)	2(50)	4/1		4
ELAPIDAE						
Acanthophis antarcticus						
	29	9(45)	11(55)	20/1		39
	29	8(42)	11(58)	19/1		
	29	9(47)	10(53)	19/1		
	29	12(50)	12(50)	25/1		
	29	8(40)	12(60)	20/1		
	29	10(48)	11(52)	21/1		
	29	10(43)	13(57)	23/1		
	29	8(47)	9(53)	17/1		
Pseudechis australis						
	28	11(79)	3(21)	15/1		16
	27	6(55)	5(45)	15/1	Female #1	59
	27	8(67)	4(33)	14/1	"	
	27	9(90)	1(10)	12/1	Female #2	
Pseudechis colletti						
	28	13(81)	3(19)	18/1		16
	28	4(36)	7(64)	12/1		

Taxa	Temp (C)	# ♂♂ (%)	# ♀♀ (%)	# eggs/# clutches	Comments	Source
	28.5	2(40)	3(60)	7/1		18
Pseudechis guttatus						
	28	5(50)	5(50)	10/1		16
	28	5(63)	3(37)	8/1		
Pseudolaticauda semifasciata						
	28	51(61)	32(39)	114/29		66
PYTHONIDAE						
Aspidites melanocephalus						
	30	2(25)	6(75)	8/1		17
Morelia amethistina						
	30	3(43)	4(57)	7/1		17
Morelia spilota						
	30	11(52)	10(48)	23/1		17
	30	5(100)	0(0)	7/1		
VIPERIDAE						
Crotalus vegrandis						
	28	5(63)	3(37)	8/1		15

SOURCES--1: Anderson and Oldham (1988), 2: Bakken and Bakken (1988), 3: Beuchat (1988), 4: Branch and Patterson (1976), 5: Braswell and Palmer (1984), 6: Bull (1980), 7: Bull (1987a), 8: Bull (1987b), 9: Bull et al. (1988), 10: Bull et al. (1985), 11: Bull and Vogt (1979), 12: Bull et al. (1982a), 13: Bull et al. (1982b), 14: Burger and Zappalorti (1988), 15: Carl et al. (1982), 16: Charles (1988), 17: Charles et al. (1985), 18: Charles et al. (1983), 19: Charnier (1966), 20: Crews (1989), 21: Crews et al. (1989), 22: Dimond (1979), 23: Dimond (1983), 24: Dimond and Mohanty-Hejmadi (1983), 25: Dutton et al. (1985), 26: Ehrengart (1971), 27: Eichenberger (1981), 28: Ewert and Nelson (in press), 29: Ferguson and Joanen (1982), 30: Ferguson and Joanen (1983), 31: Georges (1988), 32: Gillingham (1976), 33: Gutzke and Bull (1986), 34: Gutzke and Chymiy (1988), 35: Gutzke and Packard (1987), 36: Gutzke and Paukstis (1983), 37: Gutzke and Paukstis (1984), 38: Harry and Limpus (1989), 39: Hay and Magnusson (1986), 40: Hou (1985), 41: Hutton (1987), 42: Janzen (1987), 43: Janzen et al. (in press), 44: Joanen and McNease (1989), 45: Joanen et al. (1987), 46: Joss and Cuff (1987), 47: Lang (1985), 48: Lang (1987), 49: Lang et al. (1989), 50: Langerwerf (1983), 51: Langerwerf (1984), 52: Lescure et al. (1985), 53: Limpus et al. (1983), 54: Limpus et al. (1985), 55: Martinez and Cerdas (1986), 56: McCoy et al. (1983), 57: Miller and Limpus (1981), 58: Miller (1979), 59: Mirtschin (1988), 60: Mohanty-Hejmadi et al. (1985), 61: Mohanty-Hejmadi and Dimond (1986), 62: Mrosovsky (1988), 63: Mrosovsky et al. (1984), 64: Muth and Bull (1981), 65: Nakamoto and Toriba (1986), 66: Nettmann and Rykena (1985), 67: Osgood (1978), 68: Packard et al. (1989), 69: Packard et al. (1984), 70: Packard et al. (1985), 71: Pieau (1971), 72: Pieau (1972), 73: Pieau (1973), 74: Pieau (1975a), 75: Pieau (1975b), 76: Pieau (1976), 77: Pieau (1978), 78: Raynaud and Pieau (1972), 79: Rimblot et al. (1985), 80: Rimblot-Baly et al. (1987), 81: Roggenbuck and Jenssen (1986), 82: Sachsse (1984), 83: Schwarzkopf and Brooks (1985), 84: Standora and Spotila (1985), 85: Thompson (1983), 86: Thompson (1988), 87: Thorogood and Whimster (1979), 88: Tokunaga (1985), 89: Tokunaga (1986), 90: Tokunaga (1989), 91: Viets

(1989), 92: Vogt (1980), 93: Vogt and Bull (1982), 94: Vogt et al. (1982), 95: Wagner (1980), 96: Webb et al. (1987), 97: Webb et al. (1983), 98: Webb et al. (1986), 99: Webb and Smith (1984), 100: Wood and Wood (1982), 101: Yamakoshi et al. (1987), 102: Yntema (1976), 103: Yntema (1981), 104: Yntema and Mrosovsky (1979), 105: Yntema and Mrosovsky (1980), 106: Yntema and Mrosovsky (1982), 107: Zaborski et al. (1982), 108: Zaborski et al. (1988).

REFERENCES

Anderson, A. and C. Oldham. 1988. Captive husbandry and propagation of the African fat-tail gecko *Hemitheconyx caudicinctus*. Pp. 75-85. *In:* K. H. Peterson (ed.), 10th Int. Herpetol. Symp. on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Bakken, D. J. and L. Bakken. 1988. Husbandry and reproduction in *Boiga dendrophila* including a case of delayed fertilization. Pp. 135-140. *In:* K. H. Peterson (ed.), 10th Int. Herpetol. Symp. on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Beuchat, C. A. 1988. Temperature effects during gestation in a viviparous lizard. J. Therm. Biol. 13: 135-142.

Branch, W. R. and R. W. Patterson. 1976. Notes on eggs and hatchlings of *Xenocalamus bicolor lineatus* Roux from South Africa. Herpetol. Rev. 7: 116-117.

Braswell, A. L. and W. M. Palmer. 1984. *Cemophora coccinea copei* (northern scarlet snake). Reproduction. Herpetol. Rev. 15: 49.

Bull, J. J. 1980. Sex determination in reptiles. Quart. Rev. Biol. 55: 3-21.

----------. 1987a. Temperature-sensitive periods of sex determination in a lizard: similarities with turtles and crocodilians. J. Exp. Zool. 241: 143-148.

----------. 1987b. Temperature-dependent sex determination in reptiles: validity of sex diagnosis in hatchling lizards. Canadian J. Zool. 65: 1421-1424.

----------, W. H. N. Gutzke and D. Crews. 1988. Sex reversal by estradiol in three reptilian orders. Gen. Comp. Endocrinol. 70: 425-428.

----------, J. M. Legler and R. C. Vogt. 1985. Non-temperature dependent sex determination in two suborders of turtles. Copeia 1985: 784-786.

---------- and R. C. Vogt. 1979. Temperature-dependent sex determination in turtles. Science 206: 1186-1188.

----------, ---------- and M. G. Bulmer. 1982a. Heritability of sex ratio in turtles with environmental sex determination. Evolution 36: 333-341.

----------, ---------- and C. J. McCoy. 1982b. Sex determining temperatures in turtles: a geographic comparison. Evolution 36: 326-332.

Burger, J. and R. T. Zappalorti. 1988. Effects of incubation temperature on sex ratios in pine snakes: differential vulnerability of males and females. Amer. Natur. 132: 492-505.

Carl, G., K. H. Peterson and R. M. Hubbard. 1982. Reproduction in captive Uracoan rattlesnakes, *Crotalis vegrandis*. Herpetol. Rev. 13: 42-43.

Charles, N. 1988. Captive reproduction of seven species of Australian snakes of the families Elapidae and Boidae. Pp. 158-168. *In:* K. H. Peterson (ed.), 10th Int. Herpetol. Symp. on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

----------, R. Field and R. Shine. 1985. Notes on the reproductive biology of Australian pythons, genera *Aspidites*, *Liasis* and *Morelia*. Herpetol. Rev. 16: 45-48.

----------, A. Watts and R. Shine. 1983. Captive reproduction in an Australian elapid snake *Pseudechis colletti*. Herpetol. Rev. 14: 16-18.

Charnier, M. 1966. Action de la température sur la sex-ratio chez l'embryon d'*Agama agama* (Agamidae, Lacertilien). Soc. Biol. Ouest Africa 160: 620-622.

Crews, D. 1989. Absence of temperature-dependent sex determination in congeneric sexual and parthenogenetic *Cnemidophorus* lizards. J. Exp. Zool. 252: 318-320.

----------, T. Wibbels and W. H. N. Gutzke. 1989. Action of sex steroid hormones on temperature-induced sex determination in the snapping turtle (*Chelydra serpentina*). Gen. Comp. Endocrinol. 76: 159-166.

Dimond, M. T. 1979. Sex differentiation and incubation temperature in turtles. Amer. Zool. 19: 981 (Abstr.).

----------. 1983. Sex of turtle hatchlings as related to incubation temperature. Pp. 88-101 *In:* Proc. 6th Reptile Symp. on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

---------- and P. Mohanty-Hejmadi. 1983. Incubation temperature and sex differentiation in a sea turtle. Amer. Zool. 23: 1017 (Abstr.).

Dutton, P. H., C. P. Whitmore and N. Mrosovsky. 1985. Masculinisation of leatherback turtle *Dermochelys coriacea* hatchlings from eggs incubated in styrofoam boxes. Biol. Conserv. 31: 249-264.

Ehrengart, W. 1971. On the breeding and rearing of Greek tortoises. Salamandra 7: 71-80.

Eichenberger, P. 1981. Smaragdhagedissen kweken op bestelling. Lacerta 39: 72-77.

Ewert, M. A. and C. E. Nelson. In press. Sex determination in turtles: diverse patterns and some possible adaptive values. Copeia.

Ferguson, M. W. J. and T. Joanen. 1982. Temperature of egg incubation determines sex in *Alligator mississippiensis*. Nature 296: 850-853.

---------- and ----------. 1983. Temperature-dependent sex determination in *Alligator mississippiensis*. J. Zool. 200: 143-177.

Georges, A. 1988. Sex determination is independent of incubation temperature in another chelid turtle, *Chelodina longicollis*. Copeia 1988: 248-254.

Gillingham, J. C. 1976. Early egg deposition by the southern black racer, *Coluber constrictor priapus*. Herpetol. Rev. 7: 115.

Gutzke, W. H. N. and J. J. Bull. 1986. Steroid hormones reverse sex in turtles. Gen. Comp. Endocrinol. 64: 368-372.

---------- and D. B. Chymiy. 1988. Sensitive periods during embryogeny for hormonally induced sex determination in turtles. Gen. Comp. Endocrinol. 71: 265-267.

---------- and G. C. Packard. 1987. The influence of temperature on eggs and hatchlings of Blanding's turtles, *Emydoidea blandingii*. J. Herpetol. 21: 161-163.

---------- and G. L. Paukstis. 1983. Influence of the hydric environment on sexual differentiation of turtles. J. Exp. Zool. 226: 467-469.

---------- and ----------. 1984. A low threshold temperature for sexual differentiation in the painted turtle, *Chrysemys picta*. Copeia 1984: 546-547.

Harry, J. L. and C. L. Limpus. 1989. Low-temperature protection of marine turtle eggs during long-distance relocation. Australian Wildl. Res. 16: 317-320.

Hay, M. and W. E. Magnusson. 1986. A captive breeding of the Australian death adder, *Acanthophis antarcticus*. Herpetol. Rev. 17: 13-14.

Hou, L. 1985. Sex determination by temperature for incubation in *Chinemys reevesii*. Acta Herpetol. Sinica 4: 130.

Hutton, J. M. 1987. Incubation temperatures, sex ratios and sex determination in a population of Nile crocodiles (*Crocodylus niloticus*). J. Zool. 211: 143-155.

Janzen, F. J. 1987. Influence of environmental conditions on use of metabolic substrates and growth by embryonic snapping turtles. Amer. Zool. 27: 54A (Abstr.).

----------, G. C. Packard, M. J. Packard, T. J. Boardman and J. R. zumBrunnen. In press. Mobilization of lipid and protein by embryonic snapping turtles in wet and dry environments. J. Exp. Zool.

---------- and G. L. Paukstis. In press. Environmental sex determination in reptiles: ecology, evolution, and experimental design. Quart. Rev. Biol.

Joanen, T. and L. L. McNease. 1989. Ecology and physiology of nesting and early development of the American alligator. Amer. Zool. 29: 987-998.

----------, L. McNease and M. W. J. Ferguson. 1987. The effects of egg incubation temperature on post-hatching growth of American alligators. Pp. 533-537 *In:* G. J. W. Webb, S. C. Manolis and P. J. Whitehead (eds.), Wildlife Management: Crocodiles and Alligators. Surrey Beatty and Sons; New South Wales, Australia.

Joss, J. M. P. and A. Cuff. 1987. Steroidogenesis during gonadal differentiation in the salt water crocodile, *Crocodylus porosus*. Amer. Zool. 27: 66A (Abstr.).

Lang, J. W. 1985. Incubation temperature affects thermal selection of hatchling crocodiles. Amer. Zool. 25: 18A (Abstr.).

----------. 1987. Crocodilian thermal selection. Pp. 301-317 *In:* G. J. W. Webb, S. C. Manolis and P. J. Whitehead (eds.), Wildlife Management: Crocodiles and Alligators. Surrey Beatty and Sons; New South Wales, Australia.

----------, H. Andrews and R. Whitaker. 1989. Sex determination and sex ratios in *Crocodylus palustris*. Amer. Zool. 29: 935-952.

Langerwerf, B. 1983. Über die Haltung und Zucht von *Agama caucasia* (Eichwald, 1831) (Sauria: Agamidae), nebst Bemerkungen zur erfolgreichen Zucht weiterer palaearktischer Echsen. Salamandra 19: 11-20.

----------. 1984. Techniques for large-scale breeding of lizards from temperate climates in greenhouse enclosures (breeding many species of lizards in captivity, aiming the maintenance of populations of each species outside their natural habitat). Acta Zool. Pathol. Antverpiensa 78: 163-176.

Lescure J., F. Rimblot, J. Fretey, S. Renous and C. Pieau. 1985. Influence de la température d'incubation des oeufs sur la sex-ratio des nouveaux-nés de la tortue luth, *Dermochelys coriacea*. Bull. Soc. Zool. France 110: 355-359.

Limpus, C. J., P. Reed, and J. D. Miller. 1983. Islands and turtles. The influence of choice of nesting beach on sex ratio. Pp. 397-402 *In:* J. T. Baker, R. M. Carter, P. W. Sammarco and K. P. Stark (eds.), Proceedings: Inaugural Great Barrier Reef Conference. James Cook University Press; Townsville.

----------, ---------- and ----------. 1985. Temperature dependent sex determination in Queensland sea turtles: intraspecific variation in *Caretta caretta*. Pp. 343-351 *In:* G. Grigg, R. Shine and H. Ehmann (eds.), Biology of Australasian Frogs and Reptiles. Royal Zoological Society; New South Wales.

Martinez, S. and L. Cerdas. 1986. Captive reproduction of the mussurana, *Clelia clelia* (Daudin) from Costa Rica. Herpetol. Rev. 17: 12.

McCoy, C. J., R. C. Vogt and E. J. Censky. 1983. Temperature-controlled sex determination in the sea turtle *Lepidochelys olivacea*. J. Herpetol. 17: 404-406.

Miller, J. D. and C. J. Limpus. 1981. Incubation period and sexual differentiation in the green turtle *Chelonia mydas* L. Pp. 66-73 *In:* C. B. Banks and A. A. Martin (eds.), Proc. Melbourne Herpetol. Symp. Zoological Board of Victoria; Parkville.

Miller, M. 1979. Preliminary notes on the breeding of geckos in captivity. Bull. Chicago Herpetol. Soc. 14: 78-91.

Mirtschin, P. J. 1988. Captive breeding and oviparity in the king brown snake *Pseudechis australis* (Serpetes Elapidae) from Eyre Peninsula South Australia. Pp. 141-148. *In:* K. H. Peterson (ed.), 10th Int. Herpetol. Symp. on Captive Propagation and Husbandry. Zoological Consortium; Thurmont, Maryland.

Mohanty-Hejmadi, P, M. Behra and M. T. Dimond. 1985. Temperature dependent sex differentiation in the olive ridley *Lepidochelys olivacea* and its implications for conservation. Pp. 1-5 *In:* Symposium on Endangered Marine Animals and Marine Parks, 12-18 January, Paper 25. Marine Biological Association of India; Cochin.

---------- and M. T. Dimond. 1986. Temperature dependent sex determination in the olive ridley turtle. Pp. 159-162 *In:* Progress in Developmental Biology, Part A. Alan R. Liss; New York.

Mrosovsky, N. 1988. Pivotal temperatures for loggerhead turtles (*Caretta caretta*) from northern and southern nesting beaches. Canadian J. Zool. 66: 661-669.

----------, P. H. Dutton and C. P. Whitmore. 1984. Sex ratios of two species of sea turtle nesting in Suriname. Canadian J. Zool. 62: 2227-2239.

Muth, A. and J. J. Bull. 1981. Sex determination in desert iguanas: does incubation temperature make a difference? Copeia 1981: 869-870.

Nakamoto, E. and M. Toriba. 1986. Successful artificial incubation of the eggs of Erabu sea snake, *Pseudolaticauda semifasciata* (Reinwardt). Snake 18: 55-56.

Nettmann, H.-K. and S. Rykena. 1985. Verhaltens- und fortpflanzungsbiologische Notizen über kanarische und nordafrikanische *Tarentola*-Arten. Bonner Zool. Beitr. 36: 287-305.

Osgood, D. W. 1978. Effects of temperature on the development of meristic characters in *Natrix fasciata*. Copeia 1978: 33-47.

Packard, G. C., M. J. Packard and G. F. Birchard. 1989. Sexual differentiation and hatching success by painted turtles incubating in different thermal and hydric environments. Herpetologica 45: 385-392.

----------, ---------- and T. J. Boardman. 1984. Effects of the hydric environment on metabolism of embryonic snapping turtles do not result from altered patterns of sexual differentiation. Copeia 1984: 547-550.

----------, ---------- and W. H. N. Gutzke. 1985. Influence of hydration of the environment on eggs and embryos of the terrestrial turtle *Terrapene ornata*. Physiol. Zool. 58: 564-575.

Pieau, C. 1971. Sur la proportion sexuelle chez les embryons de deux Chéloniens (*Testudo graeca* L. et *Emys orbicularis* L.) issus d'oeufs incubés artificiellement. C. R. Hebd. Séanc. Acad. Sci., Paris (Ser. D) 274: 3071-3074.

----------. 1972. Effets de la température sur le développement des glandes génitales chez les embryons de deux Chéloniens, *Emys orbicularis* L. et *Testudo graeca* L. C. R. Hebd. Séanc. Acad. Sci., Paris (Ser. D) 274: 719-722.

----------. 1973. Nouvelles données expérimentales concernant les effets de la température sur la différenciation sexuelle chez les embryons de Chéloniens. C. R. Hebd. Séanc. Acad. Sci., Paris (Ser. D) 277: 2789-2792.

----------. 1975a. Temperature and sex differentiation in embryos of two chelonians, *Emys orbicularis* L. and *Testudo graeca* L. Pp. 332-339 *In:* R. Reinboth (ed.), Intersexuality in the Animal Kingdom. Springer-Verlag; New York.

----------. 1975b. Action de la temperature sur le phenotype sexuel des embryons d'un chelonien, *Emys orbicularis* L. Bull. Soc. Zool. France Suppl. 1: 12-22.

----------. 1976. Données récentes sur la différenciation sexuelle en fonction de la température chez les embryons d'*Emys orbicularis* L. (Chélonien). Bull. Soc. Zool. Fr. Suppl. 4: 46-53.

----------. 1978. Effets de températures d'incubation basses et élevées, sur la différenciation sexuelle chez des embryons d'*Emys orbicularis* L. (Chélonien). C. R. Hebd. Séanc. Acad. Sci., Paris (Ser. D) 286: 121-124.

Raynaud, A. and C. Pieau. 1972. Effets de diverses températures d'incubation sur le développement somatique et sexuel des embryons de lézard vert (*Lacerta viridis* Laur.). C. R. Hebd. Séanc. Acad. Sci., Paris (Ser. D) 275: 2259-2262.

Rimblot, F., J. Fretey, N. Mrosovsky, J. Lescure and C. Pieau. 1985. Sexual differentiation as a function of the incubation temperature of eggs in the sea-turtle *Dermochelys coriacea* (Vandelli, 1761). Amphibia-Reptilia 6: 83-92.

Rimblot-Baly, F., J. Lescure, J. Fretey and C. Pieau. 1987. Sensibilité a la température de la différenciation sexuelle chez la Tortue Luth, *Dermochelys coriacea* (Vandelli, 1761); application des données de l'incubation artificielle a l'étude de la sex-ratio dans la nature. Ann. Sci. Natur. Zool. Paris 8: 277-290.

Roggenbuck, M. E. and T. A. Jenssen. 1986. The ontogeny of display behaviour in *Sceloporus undulatus* (Sauria: Iguanidae). Ethology 71: 153-165.

Sachsse, W. 1984. Long term studies of the reproduction of *Malaclemys terrapin centrata*. Acta Zool. Pathol. Antverpiensa 78: 297-308.
Schwarzkopf, L. and R. J. Brooks. 1985. Sex determination in northern painted turtles: effect of incubation at constant and fluctuating temperatures. Canadian J. Zool. 63: 2543-2547.
Standora, E. A. and J. R. Spotila. 1985. Temperature dependent sex determination in sea turtles. Copeia 1985: 711-722.

Thompson, M. B. 1983. The Physiology and Ecology of the Eggs of Pleurodiran Tortoise *Emydura macquarii* (Gray), 1831. Ph.D. Thesis, University of Adelaide, South Australia.
----------. 1988. Influence of incubation temperature and water potential on sex determination in *Emydura macquarii* (Testudines: Pleurodira). Herpetologica 44: 86-90.
Thorogood, J. and I. W. Whimster. 1979. The maintenance and breeding of the leopard gecko *Eublepharis macularius*. Intern. Zoo Yearbk. 19: 74-78.
Tokunaga, S. 1985. Temperature-dependent sex determination in *Gekko japonicus* (Gekkonidae, Reptilia). Devel. Growth Differ. 27: 117-120.
----------. 1986. Ecological significance of temperature-dependent sex determination in reptiles. Acta Herpetol. Sinica 5: 59-60.
----------. 1989. Temperature-dependent sex determination and the life history of *Gekko japonicus* (Reptilia: Gekkonidae). (Abstr.) *In:* First World Congress of Herpetology, 11-19 September 1989, Canterbury.

Viets, B. E. 1989. The effects of temperature on sex and development in the iguanid lizards *Anolis carolinensis* and *Sceloporus undulatus*. Amer. Zool. 29: 28A (Abstr.).
Vogt, R. C. 1980. Natural history of the map turtles *Graptemys pseudogeographica* and *G. ouachitensis* in Wisconsin. Tulane Stud. Zool. Bot. 22: 17-48.
---------- and J. J. Bull. 1982. Genetic sex determination in the spiny softshell *Trionyx spiniferus* (Testudines: Trionychidae)(?). Copeia 1982: 699-700.
----------, ----------, C. J. McCoy and T. W. Houseal. 1982. Incubation temperature influences sex determination in kinosternid turtles. Copeia 1982: 480-482.

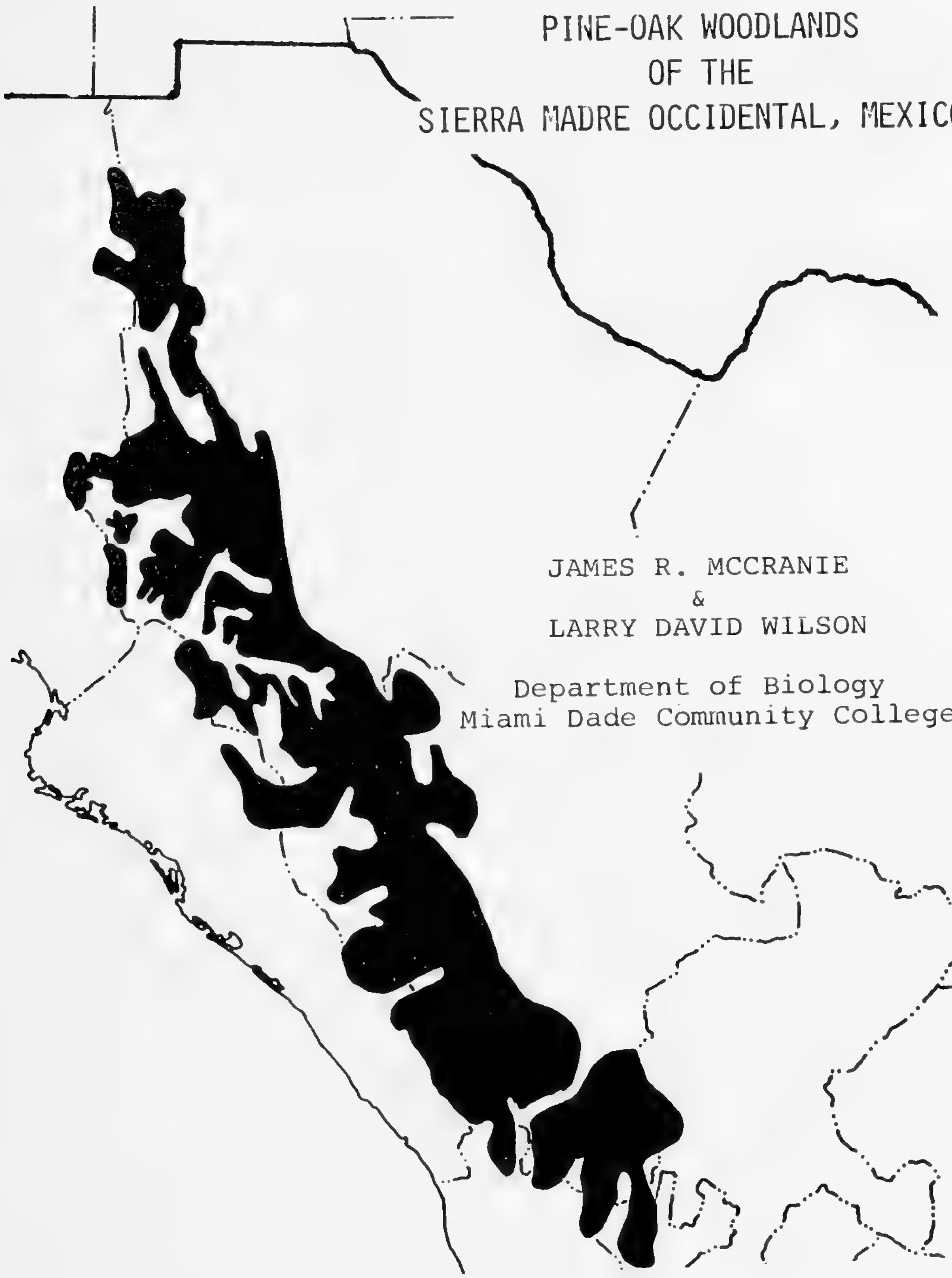
Wagner, E. 1980. Gecko husbandry and reproduction. Pp. 115-117 *In:* J. B. Murphy and J. T. Collins (eds.), Reproductive Biology and Diseases of Captive Reptiles. SSAR Contributions to Herpetology No. 1.
Webb, G. J. W., A. M. Beal, S. C. Manolis and K. E. Dempsey. 1987. The effects of incubation temperature on sex determination and embryonic development rate of *Crocodylus johnstoni* and *C. porosus*. Pp. 507-531 *In:* G. J. W. Webb, S. C. Manolis and P. J. Whitehead (eds.), Wildlife Management: Crocodiles and Alligators. Surrey Beatty and Sons, New South Wales, Australia.
----------, R. Buckworth and S. C. Manolis. 1983. *Crocodylus johnstoni* in the McKinlay River, N. T. VI. Nesting biology. Australian Wildl. Res. 10: 607-637.
----------, D. Choquenot and P. J. Whitehead. 1986. Nests, eggs, and embryonic development of *Carettochelys insculpta* (Chelonia: Carettochelidae) from Northern Australia. J. Zool., B 1: 521-550.
---------- and A. M. A. Smith. 1984. Sex ratio and survivorship in the Australian freshwater crocodile *Crocodylus johnstoni*. Symp. Zool. Soc. London 52: 319-355.
Wood, F. E. and J. R. Wood. 1982. Sex ratios in captive-reared green turtles, *Chelonia mydas*. Copeia 1982: 482-485.

Yamakoshi, M., W. E. Magnusson and J. M. Hero. 1987. The nesting biology of *Paleosuchus trigonatus*: sources of heat for nests, survivorship and sex ratios. Amer. Zool. 27: 67A (Abstr.).
Yntema, C. L. 1976. Effects of incubation temperatures on sexual differentiation in the turtle, *Chelydra serpentina*. J. Morphol. 150: 453-462.
----------. 1981. Characteristics of gonads and oviducts in hatchlings and young of *Chelydra serpentina* resulting from three incubation temperatures. J. Morphol. 167: 297-304.

---------- and N. Mrosovsky. 1979. Incubation temperature and sex ratio in hatchling loggerhead turtles: a preliminary report. Marine Turtle Newsl. 11: 9-10.
---------- and ----------. 1980. Sexual differentiation in hatchling loggerheads (*Caretta caretta*) incubated at different controlled temperatures. Herpetologica 36: 33-36.
---------- and ----------. 1982. Critical periods and pivotal temperatures for sexual differentiation in loggerhead sea turtles. Canadian J. Zool. 60: 1012-1016.

Zaborski, P., M. Dorizzi and C. Pieau. 1982. H-Y antigen expression in temperature sex-reversed turtles (*Emys orbicularis*). Differentiation 22: 73-78.
----------, ---------- and ----------. 1988. Temperature-dependent gonadal differentiation in the turtle *Emys orbicularis*: concordance between sexual phenotype and serological H-Y antigen expression at threshold temperature. Differentiation 38: 17-20.

ANNOTATED BIBLIOGRAPHY TO THE HERPETOFAUNA OF THE PINE-OAK WOODLANDS OF THE SIERRA MADRE OCCIDENTAL, MEXICO



JAMES R. MCCRANIE
&
LARRY DAVID WILSON

Department of Biology
Miami Dade Community College

SMITHSONIAN
HERPETOLOGICAL INFORMATION
SERVICE
NO. 84

1990

SMITHSONIAN
HERPETOLOGICAL
INFORMATION
SERVICE

The SHIS series publishes and distributes translations, bibliographies, indices, and similar items judged useful to individuals interested in the biology of amphibians and reptiles, but unlikely to be published in the normal technical journals. Single copies are distributed free to interested individuals. Libraries, herpetological associations, and research laboratories are invited to exchange their publications with the Division of Amphibians and Reptiles.

We wish to encourage individuals to share their bibliographies, translations, etc. with other herpetologists through the SHIS series. If you have such items please contact George Zug for instructions on preparation and submission. Contributors receive 50 free copies.

Please address all requests for copies and inquiries to George Zug, Division of Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington DC 20560 USA. Please include a self-addressed mailing label with requests.

INTRODUCTION

This bibliography is a result of a literature search which helped form the foundation for our study entitled "The biogeography of the herpetofauna of the pine-oak woodlands of the Sierra Madre Occidental of Mexico" Milwaukee Pub. Mus. Contrib. Biol. Geol. (72):1-30, 1987.

The bibliography includes all references known to the authors that contain bonafide records of the occurrence of amphibians and reptiles in the pine-oak woodlands of the Sierra Madre Occidental of Mexico. The reader is referred to that study for a definition of the limits of the study area.

The 86 species included in the study and their literature citatations are presented below in alphabetical order within their respective orders. We believe this bibliography (188 references) to be relatively complete through the year 1986. In addition, six later references are included in a addendum.

We wish to extend our sincere gratitude to Joy-Ann Perard for her typing of the manuscript. It was a time-consuming task, and we much appreciate her help.

SPECIES LIST

Class Amphibia

Order Caudata

Ambystoma rosaceum 3, 5, 6, 28, 38, 48, 63, 79, 86, 94, 113, 114, 149, 159 (also as tigrinum), 160 (as tigrinum), 175, 176, 177, 179, 190.

Ambystoma tigrinum 28, 113, 175.

Pseudoeurycea bellii 85, 161.

Order Salientia

Bufo compactilis 38, 73, 160, 170, 175.

Bufo microscaphus 3, 22, 24 (as compactilis), 56, 106, 133, 170, 175, 176, 177, 191.

Bufo occidentalis 38, 56, 57, 73, 93, 94, 106, 152, 160, 175, 176.

Bufo punctatus 160.

Bufo woodhousei 160.

Eleutherodactylus occidentalis 176.

Eleutherodactylus tarahumaraensis 142, 147, 175, 186

Hyla arenicolor 40, 42, 56, 57, 73, 79, 94, 152, 160, 175, 177, 186.

Hyla bistincta 40, 175.

Hyla eximia 3, 40, 42, 56, 63, 69, 73, 79, 131, 133, 160, 175, 176, 177, 179, 186.

Rana chiricahuensis (all as R. pipiens or synonyms except 62, 102, and 175 unless otherwise noted) 3, 19, 38, 42, 56 (as forreri), 57, 62, 63, 73, 94, 102, 109, 111, 114, 152, 160, 175, 176, 177.

Rana magnaocularis 46, 62.

Rana pustulosa 57, 61, 175, 183.

Rana tarahumarae 18, 19, 35, 61, 62, 73, 79, 94, 131, 177, 185, 188.

Scaphiopus multiplicatus 38, 160, 175.

Tomodactylus nitidus 57, 175, 176.

Suborder Serpentes

Crotalus willardi 8, 35, 53, 59, 60, 75, 76, 124, 142, 152, 160, 175, 193.

Diadophis punctatus 10, 48, 50, 89, 130, 142, 145, 152, 160, 175.

Dryadophis cliftoni 57, 175.

Geophis dugesii 37, 57, 81, 142, 172, 175, 192.

Hypsiglena torquata 160.

Lampropeltis mexicana 47, 49, 51, 52, 162, 175.

Lampropeltis pyromelana 79, 124, 130, 135, 141, 142, 148, 160.

Leptophis diplotropis 57, 175.

Masticophis mentovarius 57, 70, 71, 175.

Masticophis taeniatus 101, 160, 184.

Pituophis deppei 31, 39, 175.

Pituophis melanoleucus 74, 134, 142, 160.

Rhadinaea hesperia 57, 99, 142, 175.

Rhadinaea laureata 38, 99, 174, 175.

Salvadora bairdi 57, 94, 175.

Salvadora grahamiae 142, 160, 175.

Senticolis triaspis 36, 142, 152.

Storeria storerioides 2, 56, 57, 94, 142, 145, 175, 176.

Tantilla bocourti 90, 94, 176.

Tantilla wilcoxi 84, 94, 123, 130,42, 152.

Thamnophis cyrtopsis 30 (part), 38 (as *eques*), 57, 79, 94, 96, 112 (as *eques* [part]), 122 (as *eques*), 124 (as *eques*), 128 (as *eques*), 138, 142, 152 (as *eques*), 160, 165, 173, 175.

Thamnophis elegans 9, 24 (as *cyrtopsis*), 30 (as *cyrtopsis* [part]), 44, 122, 128, 130, 138, 142, 160, 171, 175.

Thamnophis eques 30, 35, 38 (as *macrostemma*), 42, 108, 109, 112 (part), 119, 122 (as *macrostemma megalops*), 124 (as *macrostemma megalops*), 128 (as *macrostemma*), 138, 142, 160, 175, 177.

Thamnophis melanogaster 30, 38, 109, 112, 122, 138, 142, 175.

<u>Thamnophis melanogaster</u> 30, 38, 109, 112, 122, 138, 142, 175.

<u>Thamnophis nigronuchalis</u> 30 (as <u>rufipunctatus</u> [part]), 122 (as <u>rufipunctatus</u> [part]), 142, 155 (also as <u>rufipunctatus</u> [part]), 175.

<u>Thamnophis rufipunctatus</u> 122 (part), 124, 128, 138, 142, 150, 152, 155 (part), 160, 177.

<u>Trimorphodon tau</u> None. Our record based upon LSUMZ 35157 collected in Nayarit at 22.4 mi SW Las Canoas, Durango at 2370 m.

BIBLIOGRAPHY

1. Amaral, A. 1927. Studies of nearctic Ophidia II. Crotalus pricei Van Denburgh, 1896, a synonym of C. triseriatus (Wagler, 1830). Bull. Antivenin Inst. Amer. 1(2): 48-54.
2. Anderson, J.D. 1960. Storeria storerioides in western Mexico. Herpetologica 16(1): 63-66.
3. Anderson, J.D. 1961. The life history and systematics of Ambystoma rosaceum. Copeia 1961(4): 371-377.
4. Anderson, J.D. 1962. Egg laying and nesting in Sceloporus scalaris slevini. Herpetologica 18(3): 162-164.
5. Anderson, J.D. 1978. Ambystoma rosaceum. Cat. Amer. Amphib. Rept. 206.1-206.2.
6. Anderson, J.D., and R.G. Webb. 1978. Life history aspects of the Mexican salamander Ambystoma rosaceum (Amphibia, Urodela, Ambystomidae). J. Herpetol. 12(1): 89-93.
7. Anderson, J.D., and D.C. Wilhoft. 1959. A new subspecies of Eumeces multivirgatus from Mexico. Copeia 1959(1): 57-60.
8. Armstrong, B.L., and J.B. Murphy. 1979. The natural history of Mexican rattlesnakes. Univ. Kansas Mus. Natur. Hist. Spec. Publ. (5): i-vii + 1-88.
9. Baker, R.H., and R.G. Webb. 1976. Thamnophis elegans captures Sorex emarginatus. Herpetol. Rev. 7(3): 112.
10. Blanchard, F.N. 1942. The ring-neck snakes, genus Diadophis. Bull. Chicago Acad. Sci. 7(1): 1-144.
11. Bogert, C.M., and J.A. Oliver. 1945. A preliminary analysis of the herpetofauna of Sonora. Bull. Amer. Mus. Natur. Hist. 83(6): 297-426.
12. Boulenger, G.A. 1885. Catalogue of the Lizards in the British Museum (Natural History). Second ed. Vol. 2. Taylor and Francis; London.
13. Boulenger, G.A. 1887. Catalogue of the Lizards in the British Museum (Natural History). Second ed. Vol. 3. Taylor and Francis; London.
14. Boulenger, G.A. 1894. Catalogue of the Snakes in the British Museum (Natural History). Vol. 2. Taylor and Francis; London.
15. Boulenger, G.A. 1895 (1894). Second report on additions to the lizard collection in the Natural-History Museum. Proc. Zool. Soc. London 1894: 722-736.
16. Boulenger, G.A. 1896. Catalogue of the Snakes in the British Museum (Natural History). Vol. 3. Taylor and Francis; London.
17. Boulenger, G.A. 1897. A revision of the lizards of the genus Sceloporus. Proc. Zool. Soc. London 1897: 474-522.
18. Boulenger, G.A. 1917. Descriptions of new frogs of the genus Rana. Ann. Mag. Natur. Hist., ser. 8, 20: 413-418.
19. Boulenger, G.A. 1920. A monograph of the American frogs of the genus Rana. Proc. Amer. Acad. Arts Sci. 55: 413-480.
20. Burt, C.E. 1931. A study of the teiid lizards of the genus Cnemidophorus with special reference to their phylogenetic relationships. Bull U.S. Natl. Mus. (154): i-viii, + 1-286.

21. Carpenter, C.C. 1978. Comparative display behavior in the genus Sceloporus (Iguanidae). Milwaukee Pub. Mus. Contrib. Biol. Geol. (18): 1-71.
22. Chrapliwy, P.S. 1956. Extensions of known range of certain amphibians and reptiles of Mexico. Herpetologica 12(2): 121-124.
23. Chrapliwy, P.S. 1964. Taxonomy and distribution of the jarrovi complex of lizards of the torquantus group, genus Sceloporus. Ph.D. Thesis, Univ. Illinois.
24. Chrapliwy, P.S., and C.M. Fugler. 1955. Amphibians and reptiles collected in Mexico in the summer of 1953. Herpetologica 11(2): 121-128.
25. Cole, C.J. 1963. Variation, distribution, and taxonomic status of the lizard, Sceloporus undulatus virgatus Smith. Copeia 1963(2): 413-425.
26. Cole, C.J. 1968. Sceloporus virgatus. Cat. Amer. Amph. Rept. 72.1-72.2.
27. Cole, C.J. 1978. Karyotypes and systematics of the lizards in the variabilis, jalapae, and scalaris species groups of the genus Sceloporus. Amer. Mus. Novitates (2653): 1-13.
28. Collins, J.P. 1979. Sexually mature larvae of the salamanders Ambystoma rosaceum and A. trigrinum velasci from Chihuahua, Mexico: Taxonomic and ecologic notes. J. Herpetol. 13(3): 351-354.
29. Collins, J.T. 1982. Crotalus stejnegeri. Cat. Amer. Amph. Rept. 303.1-303.2.
30. Conant, R. 1963. Semiaquatic snakes of the genus Thamnophis from the isolated drainage system of the Rio Nazas and adjacent areas in Mexico. Copeia 1963(3): 473-499.
31. Conant, R. 1965. Miscellaneous notes and comments on toads, lizards, and snakes from Mexico. Amer. Mus. Novitates (2205): 1-38.
32. Conant, R. 1967. Vacation yields rare rattlesnake. America's First Zoo 19(4): 26.
33. Cope, E.D. 1887. Catalogue of batrachians and reptiles of Central America and Mexico. Bull. U. S. Natl. Mus. (32): 1-98.
34. Dixon, J.R. 1969. Taxonomic review of the Mexican skinks of the Eumeces brevirostris group. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (168): 1-30.
35. Dominguez, P., T. Alvarez, and P. Huerta. 1977 (1974). Coleccion de anfibios y reptiles del noroeste de Chihuahua, Mexico. Rev. Soc. Mexicana Hist. Natur. 35: 117-142.
36. Dowling, H.G. 1960. A taxonomic study of the ratsnakes, genus Elaphe Fitzinger. VII. The triaspis section. Zoologica 45 (6): 53-80.
37. Downs, F.L. 1967. Intrageneric relationships among Colubrid snakes of the genus Geophis Wagler. Misc. Publ. Mus. Zool. Univ. Michigan (131): i-iv + 1-193.
38. Drake, J.J. 1958. The brush mouse Peromyscus boylii in southern Durango. Publ. Michigan St. Mus., Biol. Ser. 1(3): 97-132.
39. Duellman, W.E. 1960. A taxonomic study of the Middle American snake, Pituophis deppei. Univ. Kansas Publ. Mus. Natur. Hist. 10(10): 599-610.
40. Duellman, W.E. 1970. The hylid frogs of Middle America. Monogr. Mus. Natur. Hist. Univ. Kansas (1): i-xi + 1-753.

41. Duellman, W.E., and R.G. Zweifel. 1962. A synopsis of the lizards of the sexlineatus group (genus Cnemidophorus). Bull. Amer. Mus. Natur. Hist. 123(3): 155-210.
42. Dunn, E.R. 1936. The amphibians and reptiles of the Mexican expedition of 1934. Proc. Acad. Natur. Sci. Philadelphia 88: 471-477.

43. Fitch, H.S. 1938. A systematic account of the alligator lizards (Gerrhonotus) in the western United States and Lower California. Amer. Midl. Naturalist 20(2): 381-424.
44. Fitch, H.S. 1980. Remarks concerning certain western garter snakes of the Thamnophis elegans complex. Trans. Kansas Acad. Sci. 83(3): 106-113.
45. Fosdick, M.K. 1968. Distributional records from a collection of reptiles from western and central Mexico. Herpeton 3: 1-3.
46. Frost, J.S., and J.T. Bagnara. 1976. A new species of leopard frog (Rana pipiens complex) from northwestern Mexico. Copeia 1976(2): 332-338.

47. Garstka, W.R. 1982. Systematics of the mexicana species group of the colubrid genus Lampropeltis, with an (sic) hypothesis (sic) mimicry. Breviora (466): 1-35.
48. Gehlbach, F.R. 1965. Herpetology of the Zuni Mountains region, northwestern New Mexico. Proc. U. S. Natl. Mus. 116: 243-332.
49. Gehlbach, F.R. 1967. Lampropeltis mexicana. Cat. Amer. Amph. Rept. 55.1-55.2.
50. Gehlbach, F.R. 1974. Evolutionary relations of southwestern ringneck snakes (Diadophis punctatus). Herpetologica 30(2): 140-148.
51. Gehlbach, F.R., and J.K. Baker. 1962. Kingsnakes allied with Lampropeltis mexicana: Taxonomy and natural history. Copeia 1962(2): 291-300.
52. Gehlbach, F.R., and C.J. McCoy, Jr. 1965. Additional observations on variations and distribution of the Gray-banded kingsnake, Lampropeltis mexicana. Herpetologica 21(1): 35-38.
53. Gloyd, H.K. 1940. The rattlesnakes, genera Sistrurus and Crotalus. A study in zoogeography and evolution. Spec. Pub. Chicago Acad. Sci. (4): i-vii + 1-270.
54. Greene, H.W. 1972. Mexican reptiles in the Senckenberg Museum. Carnegie Mus. 15p.
55. Guillette, L.J., Jr., and H.M. Smith. 1982. A review of the Mexican lizard Barisia imbricata, and the description of a new subspecies. Trans. Kansas. Acad. Sci. 85(1): 13-33.
56. Gunther, A. 1885-1902. Biologia Centrali-Americana. Reptilia and Batrachia. Porter; London.

57. Hardy, L.M., and R.W. McDiarmid. 1969. The amphibians and reptiles of Sinaloa, Mexico. Univ. Kansas Publ. Mus. Natur. Hist. 18(3): 39-252.
58. Harris, H.S., Jr., and R. S. Simmons. 1972. An April birth record for Crotalus lepidus with a summary of annual broods in rattlesnakes. Bull. Maryland Herpetol. Soc. 8(2): 54-56.
59. Harris, H. S., Jr., and R. S. Simmons. 1976. The paleogeography and evolution of Crotalus willardi, with a formal description of a new subspecies from New Mexico, United States. Bull. Maryland Herpetol. Soc. 12(1): 1-22.

60. Harris, H.S., Jr., and R. S. Simmons. 1978. A preliminary account of the rattlesnakes with the descriptions of four new subspecies. Bull. Maryland Herpetol. Soc. 14(3): 105-211.
61. Hillis, D.M., J.S. Frost, and R.G. Webb. 1984. A new species of frog of the Rana tarahumarae group from southwestern Mexico. Copeia 1984(2): 398-403.
62. Hillis, D.M., J.S. Frost, and D.A. Wright. 1983. Phylogeny and biogeography of the Rana pipiens complex: A biochemical evaluation. Syst. Zool. 32(2): 132-143.
63. Holman, J.A. 1965. A polymorphic deme of Hyla eximia Baird from Durango, Mexico. J. Ohio Herpetol Soc. 5(1): 34.
64. Horowitz, S.B. 1955. An arrangement of the subspecies of the horned toad Phrynosoma orbiculare (Iguanidae). Amer. Midl. Naturalist 54(1): 204-218.

65. Iverson, J.B. 1976. Kinosternon sonoriense. Cat. Amer. Amph. Rept. 176.1-176.2.
66. Iverson, J.B. 1981. Biosystematics of the Kinosternon hirtipes species group (Testudines: Kinosternidae). Tulane Stud. Zool. Bot. 23(1): 1-74.
67. Iverson, J.B. 1985. Kinosternon hirtipes. Cat. Amer. Amph. Rept. 361.1-361.4.
68. Iverson, J.B. 1986. A checklist with Distribution Maps of the Turtles of the World. First ed. Privately Printed; Richmond.

69. Jameson, D.L., J.P. Mackey, and R.C. Richmond. 1966. The systemactics of the Pacific tree frog, Hyla regilla. Proc. California Acad. Sci. 33: 551-620.
70. Johnson, J.D. 1977. The taxonomy and distribution of the Neotropical whipsnake Masticophis mentovarius (Reptilia, Serpentes, Colubridae). J. Herpetol. 11(3): 287-309
71. Johnson, J.D. 1982. Masticophis mentovarius. Cat. Amer. Amph. Rept. 295.1-295.4.
72. Johnson, R.M., and E.A. Liner. 1978. Conopsis nasus nasus (Reptilia, Serpentes, Colubridae) in Chihuahua, Mexico. J. Herpetol. 12(1): 108-109.

73. Kellogg, R. 1932. Mexican tailless amphibians in the United States National Museum. Bull. U. S. Natl. Mus. (160): i-iv + 1-224.
74. Klauber, L.M. 1947. Classification and ranges of the gopher snakes of the genus Pituophis in the western United States. Bull. Zool. Soc. San Diego (22): 1-81.
75. Klauber, L.M. 1949. The subspecies of the ridge-nosed rattlesnake, Crotalus willardi. Trans. San Diego Soc. Natur. Hist. 11(8): 121-140.
76. Klauber, L.M., 1952. Taxonomic studies of the rattlesnakes of mainland Mexico. Bull. Zool. Soc. San Diego (26): 1-143.
77. Klauber, L.M. 1972. Rattlesnakes: Their habits, life histories, and influence on mankind. 2 vols. Univ. California Press; Berkeley.

78. Langebartel, D.A. 1959. A new lizard (Sceloporus) from the Sierra Madre Occidental of Mexico. Herpetologica 15(1): 25-27.
79. Lara-Gongora, G. 1986. New distributional records for some Mexican reptiles and amphibians. Bull. Maryland Herpetol. Soc. 22(2): 62-67.
80. Larsen K.R., and W.W. Tanner. 1974. Numeric analysis of the lizard genus Sceloporus with special reference to cranial ostelogy. Great Basin Naturalist 34(1): 1-41.
81. Legler, J.M. 1959. A new snake of the genus Geophis from Chihuahua, Mexico. Univ. Kansas Pub. Mus. Natur. Hist. 11(4): 327-334.
82. Legler, J.M., and R.G. Webb. 1960. Noteworthy records of skinks (genus Eumeces) from northwestern Mexico. Southwestern Naturalist 5(1): 16-20.
83. Lieb, C.S. 1985. Systematics and distribution of the skinks allied to Eumeces tetragrammus. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (327): 1-19.
84. Liner, E.A. 1983. Tantilla wilcoxi. Cat. Amer. Amph. Rept. 345.1-345.2.
85. Lowe, C.H., C.J. Jones, and J.W. Wright. 1968. A new plethodontid salamander from Sonora, Mexico. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (140): 1-11.

86. Maldonado-Koerdell, M. 1964. Algunas problemas de sistematica y distribucion de la familia Amystomidae (Urodela, Amphibia) en la republica Mexicana. Mems. Rev. Acad. Nac. Cienc. Antonio Alzate 59(3/4): 379-388.
87. Martin, P.S. 1958. A biogeography of reptiles and amphibians in the Gomez Farias region, Tamaulipas, Mexico. Misc. Pub. Mus. Zool. Univ. Michigan (101): 1-102.
88. Martin del Campo, R. 1935. Nota acerca de la distribucion geografica de los reptiles ponzonosas en Mexico. Ann. Inst. Biol. Univ. Mexico 6(3/4): 219-300.
89. McCoy, C.J., Jr. 1964. Notes on snakes from northern Mexico. Southwestern Naturalist 9(1): 46-48.
90. McCranie, J.R. 1977. First record of Tantilla bocourti (Reptilia: Colubridae) from Zacatecas, Mexico. Southwestern Naturalist 22(2): 275.
91. McCranie. J.R. 1981a. Crotalus pricei. Cat. Amer. Amph. Rept. 266.1-266.2.
92. McCranie, J.R. 1981b. Crotalus basiliscus. Cat. Amer. Amph. Rept. 283.1-283.2.
93. McDiarmid, R.W. 1963. A collection of reptiles and amphibians from the highland faunal assemblage of western Mexico. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (68): 1-15.
94. McDiarmid, R.W., J.F. Copp, and D.E. Breedlove. 1976. Notes on the herpetofauna of western Mexico: New records from Sinaloa and the Tres Marias Islands. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (275): 1-17.
95. Mecham, J.S. 1980. Eumeces multivirgatus. Cat. Amer. Amph. Rept. 241.1-241.2.
96. Milstead, W.W. 1953. Geographic variation in the garter snake, Thamnophis cyrtopsis. Texas J. Sci. 5(3): 348-379.
97. Montanucci, R.R. 1979. Notes on systematics of horned lizards allied to Phrynosoma orbiculare (Lacertilia: Iguanidae). Herpetologica 35(2): 116-124.

98. Montanucci, R.R. 1981. Habitat separation between Phrynosoma douglassi and P. orbiculare (Lacertilia: Iguanidae) in Mexico. Copeia 1981(1): 147-153.

99. Myers, C.W. 1974. The systematics of Rhadinaea (Colubridae), a genus of New World snakes. Bull. Amer. Mus. Natur. Hist. 153(1): 1-262.

100. Parker, R.B. 1960. The status of a Mexican Lizard, Eumeces lynxe belli. Copeia 1960(4): 284-286.

101. Parker, W.S. 1982. Masticophis taeniatus. Cat. Amer. Amph. Rept. 304.1-304.4.

102. Platz, J.E., and J.S. Mecham. 1979. Rana chiricahuensis, a new species of leopard frog (Rana pipiens complex) from Arizona. Copeia 1979(3): 383-390.

103. Price, A.H. 1980. Crotalus molossus. Cat. Amer. Amph. Rept. 242.1-242.2.

104. Price, A.H. 1982. Crotalus scutulatus. Cat. Amer. Amph. Rept. 291.1-291.2.

105. Reeve, W.L. 1952. Taxonomy and distribution of the horned lizards genus Phrynosoma. Univ. Kansas Sci. Bull. 34(14): 817-960.

106. Riemer, W.J. 1955. Comments on the distribution of certain Mexican toads. Herpetologica 11(1): 17-23.

107. Robinson, M.D. 1979. Systematics of skinks of the Eumeces brevirostris species group in western Mexico. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (319): 1-13.

108. Rossman, D.A., 1965 (1964). A new subspecies of the common garter snake, Thamnophis sirtalis, from the Florida Gulf Coast. Proc. Louisiana Acad. Sci. 27: 67-73.

109. Rossman, D.A., and R.M. Blaney. 1968. A new natricine snake of the genus Adelophis from western Mexico. Occ. Pap. Mus. Zool. Louisiana St. Univ. (35): 1-12.

110. Rossman, D.A., and V. Wallach. 1987. Adelophis, A. copei, A. foxi. Cat. Amer. Amph. Rept. 408.1-408.2.

111. Ruibal, R. 1957. An altitudinal and latitudinal cline in Rana pipiens. Copeia 1957(3): 212-221.

112. Ruthven, A.G. 1908. Variations and genetic relationships of the garter-snakes. Bull. U.S. Natl. Mus. (61): i + xii + 1-201.

113. Shaffer, H.B. 1983. Biosystematics of Ambystoma rosaceum and A. tigrinum in northwestern Mexico. Copeia 1983(1): 67-78.

114. Shannon, F.A. 1951. Notes on a herpetological collection from Oaxaca and other localities in Mexico. Proc. U.S. Natl. Mus. 101: 465-484.

115. Sites, J.W., Jr., and J.R. Dixon. 1981. A new subspecies of the iguanid lizard, Sceloporus grammicus, from northeastern Mexico, with comments on its evolutionary implications and the status of S. g. disparilis. J. Herpetol. 15(1): 59-69.

116. Smith, H.M. 1937. A synopsis of the scalaris group of the lizard genus Sceloporus. Occ. Pap. Mus. Zool. Univ. Michigan (361): 1-8.

117. Smith, H.M. 1938 (1936). The lizards of the torquatus group of the genus Sceloporus Wiegmann 1828. Univ. Kansas Sci. Bull. 24(21): 539-693.

118. Smith, H.M. 1939a. An annotated list of the Mexican amphibians and reptiles in the Carnegie Museum. Ann. Carnegie Mus. 27: 311-320.

119. Smith, H.M. 1939b. Notes on Mexican reptiles and amphibians. Zool. Ser. Field Mus. Natur. Hist. 24(4): 15-35.
120. Smith, H.M. 1939c. The Mexican and Central American lizards of the genus Sceloporus. Zool. Ser. Field Mus. Natur. Hist. 26: 1-397.
121. Smith, H.M. 1942a. Mexican herpetological miscellany. Proc. U. S. Natl. Mus. 92: 349-395.
122. Smith, H.M. 1942b. The synonomy of the garter snakes (Thamnophis), with notes on Mexican and Central American species. Zoologica 27 (17): 97-123.
123. Smith, H.M. 1942c. A resume of Mexican snakes of the genus Tantilla. Zoologica 27(7): 33-42.
124. Smith, H.M. 1943. Summary of the collections of snakes and crocodilians made in Mexico under the Walter Rathbone Bacon Traveling Scholarship. Proc. U.S. Natl. Mus. 93: 393-504.
125. Smith, H.M. 1971. Distribution of the racer Coluber constrictor in Mexico. J. Herpetol. 5(3/4): 212-214.
126. Smith, H.M., and P.S. Chrapliwy. 1958. New and noteworthy Mexican herptiles from the Lidicker collection. Herpetologica 13(4): 267-271.
127. Smith, H.M., and W.P. Hall. 1974. Contributions to the concepts of reproductive cycles and the systematics of the scalaris group of the lizard genus Sceloporus. Great Basin Naturalist 34(2): 97-104.
128. Smith, H.M., C.W. Nixon, and P.W. Smith. 1950. Mexican and Central American garter snakes (Thamnophis) in the British Museum (Natural History). J. Linnean Soc. Zool. 41: 571-584.
129. Smith, H.M., and R.B. Smith. 1980 (1979). Synopsis of the Herpetofauna of Mexico. VI. Guide to Mexican Turtles. Bibliographic Addendum III. John Johnson; North Bennington.
130. Smith, H.M., and E.H. Taylor. 1945. An annotated checklist and key to the snakes of Mexico. Bull. U. S. Natl. Mus. (187): i-iv + 1-239.
131. Smith, H.M., and E.H. Taylor. 1948. An annotated checklist and key to the amphibia of Mexico. Bull. U. S. Natl. Mus. (194): i-iv + 1-118.
132. Smith, H.M., and E.H. Taylor. 1950. An annotated checklist and key to the reptiles of Mexico exclusive of the snakes. Bull. U. S. Natl. Mus. (199): i-v + 1-253.
133. Stebbins, R.C. 1951. Amphibians of western North America. Univ. California Press; Berkeley.
134. Stull, O.G. 1940. Variations and relationships in the snakes of the genus Pituophis. Bull. U. S. Natl. Mus. (175): i-vi + 1-225.

135. Tanner, W.W. 1953. A study of taxonomy and phylogeny of Lampropeltis pyromelana Cope. Great Basin Naturalist 13(1/2): 47-66.
136. Tanner, W.W. 1957. A new skink of the multivirgatus group from Chihuahua. Great Basin Naturalist 17(3/4): 111-117.
137. Tanner, W.W. 1958. Two new skinks from Durango, Mexico. Great Basin Naturalist 18(2): 57-62.
138. Tanner, W.W. 1959. A new Thamnophis from western Chihuahua with notes on four other species. Herpetologica 15(4): 165-172.
139. Tanner, W.W. 1960. Sceloporus p. poinsetti taken in Sonora. Herpetologica 16(4): 235.
140. Tanner, W.W. 1961. A new subspecies of Conopsis nasus from Chihuahua, Mexico. Herpetologica 17(1): 13-18.

141. Tanner, W.W. 1983. Lampropeltis pyromelana. Cat. Amer. Amph. Rept. 342.1-342.2.
142. Tanner, W.W. 1985. Snakes of western Chihuahua. Great Basin Naturalist 45(4): 615-676.
143. Tanner, W.W., J.R. Dixon, and H.S. Harris, Jr. 1972. A new subspecies of Crotalus lepidus from western Mexico. Great Basin Naturalist 32(1): 16-24.
144. Tanner, W.W. and W.G. Robinson, Jr. 1960a (1959). A collection of herptiles from Urique, Chihuahua. Great Basin Naturalist 19(4): 75-82.
145. Tanner, W.W., and W.G. Robinson, Jr. 1960b. New and unusual serpents from Chihuahua, Mexico. Herpetologica 16(1): 67-70.
146. Taylor, E.H. 1936. A taxonomic study of the cosmopolitan scincoid lizards of the genus Eumeces with an account of the distribution and relationships of its species. Univ. Kansas Sci. Bull. 23: 1-643.
147. Taylor, E.H. 1940a. A new frog from the Tarahumara Mountains of Mexico. Copeia 1940(4): 250-253.
148. Taylor, E.H. 1940b. A new Lampropeltis from western Mexico. Copeia 1940(4): 253-255.
149. Taylor, E.H. 1941a. Two new ambystomid salamanders from Chihuahua. Copeia 1941(3): 143-146.
150. Taylor, E.H. 1941b. Herpetological miscellany, No. II. Univ. Kansas Sci. Bull. 27(7): 105-139.
151. Taylor, E.H. 1944. Two new species of Crotalid snakes from Mexico. Univ. Kansas. Sci. Bull. 30(4): 47-56.
152. Taylor, E.H., and I.W. Knobloch. 1940. Report on an herpetological collection from the Sierra Madre Mountains of Chihuahua. Proc. Biol. Soc. Washington 53: 125-130.
153. Taylor, E.H., and H.M. Smith. 1942. The snake genera Conopsis and Toluca. Univ. Kansas Sci. Bull. 28(15): 325-363.
154. Thomas, R.A., and J.R. Dixon. 1976. A re-evaluation of the Sceloporus scalaris group (Sauria: Iguanidae). Southwestern Naturalist 20(4): 523-536.
155. Thompson, F.G. 1957. A new Mexican gartersnake (genus Thamnophis) with notes on related forms. Occ. Pap. Mus. Zool. Univ. Michigan (584): 1-10.
156. Tihen, J.A. 1948. Two races of Elgaria kingii Gray. Trans. Kansas Acad. Sci. 51(3): 299-301.
157. Tihen, J.A. 1949. A review of the lizard genus Barisia. Univ. Kansas Sci. Bull. 33(3): 217-256.
158. Tihen, J.A. 1954. Gerrhonotine lizards recently added to the American Museum collection, with further revisions of the genus Abronia. Amer. Mus. Novitates (1687): 1-26.

159. Van Devender, T.R. 1973. Populations of Ambystoma tigrinum and A. rosaceum in Chihuahua, Mexico. J. Arizona Acad. Sci. 8(1): 84.
160. Van Devender, T.R., and C.H. Lowe, Jr. 1977. Amphibians and reptiles of Yepomera, Chihuahua, Mexico. J. Herpetol. 11(1): 41-50.

161. Wake, D.B., and J.F. Lynch. 1976. The distribution, ecology, and evolutionary history of Plethodontid salamanders in Tropical America. Los Angeles Co. Mus. Natur. Hist. Sci. Bull. (25): 1-65.

162. Webb, R.G. 1961. A new kingsnake from Mexico, with remarks on the mexicana group of the genus Lampropeltis. Copeia 1961(3): 326-333.
163. Webb, R.G. 1962a. A new alligator lizard (genus Gerrhonotus) from western Mexico. Herpetologica 18(2): 73-79.
164. Webb, R.G. 1962b. A new species of frog (genus Tomodactylus) from western Mexico. Univ. Kansas Pub. Mus. Natur. Hist. 15(3): 175-181.
165. Webb, R.G. 1966. Resurrected names for Mexican populations of black-necked garter snakes Thamnophis cyrtopsis (Kennicott). Tulane Stud. Zool. 13(2): 55-70.
166. Webb, R.G. 1967. Variation and distribution of the iguanid lizard Sceloporus bulleri, and the description of a related new species. Copeia 1967(1): 202-213.
167. Webb, R.G. 1968. The Mexican skink Eumeces lynxe (Squamata, Scincidae). Pub. Michigan St. Mus. Biol. Ser. 4(1): 1-28.
168. Webb, R.G. 1969. Variation, status, and relationship of the iguanid lizard Sceloporus shannonorum. Herpetologica 25(4): 300-307.
169. Webb, R.G. 1970. Gerrhonotus kingii. Cat. Amer. Amph. Rept. 97.1-97.4.
170. Webb, R.G. 1972. Resurrection of Bufo mexicanus Brocchi for a highland toad in western Mexico. Herpetologica 28(1): 1-6.
171. Webb, R.G. 1976. A review of the garter snake Thamnophis elegans in Mexico. Los Angeles Co. Mus. Natur. Hist. Contrib. Sci. (284): 1-13.
172. Webb, R.G. 1977. Comments on snakes of the genus Geophis (Colubridae) from the Mexican states of Durango and Sinaloa. Southwestern Naturalist 21(4): 548-551.
173. Webb, R.G. 1980. Thamnophis cyrtopsis. Cat. Amer. Amph. Rept. 245.1-245.4.
174. Webb, R.G. 1982. Distributional records for Mexican reptiles. Herpetol. Rev. 13(4): 132.
175. Webb, R.G. 1984. Herpetogeography in the Mazatlan-Durango region of the Sierra Madre Occidental, Mexico. Pp. 217-241. In R.A. Seigel, L.E. Hunt, J.L. Knight, L. Malaret, and N.L. Zuschlag (eds.). Vertebrate ecology and systematics. A tribute to Henry S. Fitch. Univ. Kansas Mus. Natur. Hist. Spec. Publ (10): 1-278.
176. Webb, R.G., and R.H. Baker. 1962. Terrestrial vertebrates of the Pueblo Nuevo area of southwestern Durango, Mexico. Amer. Midland Naturalist 68(2): 325-333.
177. Webb, R.G., and R.H. Baker. 1984. Terrestrial vertebrates of the Cerro Mohinora region, Chihuahua, Mexico. Southwestern Naturalist 29(2): 243-246.
178. Webb, R.G., and M. Hensley. 1959. Notes on reptiles from the Mexican state of Durango. Pub. Michigan St. Mus. Biol. Ser. 1(6): 249-258.
179. Welbourn, W.C., Jr., and R.B. Loomis. 1970. Three new species of Hannemania (Acarina, Trombiculidae) from amphibians of western Mexico. Bull. So. California Acad. Sci. 69(2): 65-73
180. Williams, K.L. 1960. Taxonomic notes on Arizona herpetozoa. Southwestern Naturalist 5(1): 25-36.
181. Wilson, L.D. 1966. The range of the Rio Grande racer in Mexico and the status of Coluber oaxaca (Jan). Herpetologica 22(1): 42-47
182. Wilson, L.D. 1978. Coluber constrictor. Cat. Amer. Amph. Rept. 218.1-218.4.

183. Zweifel, R.G. 1954a. A new frog of the genus Rana from western Mexico with a key to the Mexican species of the genus. Bull. So. California Acad. Sci. 53(3): 131-141.
184. Zweifel, R.G. 1954b. Notes on the distribution of some reptiles in western Mexico. Herpetologica 10(3): 145-149.
185. Zweifel, R.G. 1955. Ecology, distribution, and systematics of frogs of the Rana boylei group. Univ. California Pub. Zool. 54(4): 207-292.
186. Zweifel, R.G. 1956. A survey of the frogs of the augusti group, genus Eleutherodactylus. Amer. Mus. Novitates (1813): 1-35.
187. Zweifel, R.G. 1959. Variation in and distribution of lizards of western Mexico related to Cnemidophorus sacki. Bull. Amer. Mus. Natur. Hist. 117(2): 57-116.
188. Zweifel, R.G. 1968. Rana tarahumarae. Cat. Amer. Amph. Rept. 66.1-66.2.

ADDENDUM

189. Guillette, L.J., Jr., and G. Casas-Andreu. 1987. The reproductive biology of the high elevation Mexican lizard Barisia imbricata. Herpetologica 43(1): 29-38.
190. Jones, T.R., J.P. Collins, T.D. Kocher, and J.B. Mitton. 1988. Systematic status and distribution of Ambystoma tigrinum stebbinsi (Amphibia: Caudata). Copeia 1988(3): 621-635.
191. Price, A.H., and B.K. Sullivan. 1988. Bufo microscaphus. Cat. Amer. Amph. Rept. 415.1-415.3.
192. Restrepo T., J.H., and J.W. Wright. 1987. A new species of the Colubrid snake genus Geophis from Colombia. J. Herpetol. 21(3): 191-196.
193. Stille, B. 1987. Dorsal scale microdermatoglyphics and rattlesnake (Crotalus and Sistrurus) phylogeny (Reptilia: Viperidae: Crotalinae). Herpetologica 43(1): 98-104.
194. Tanner, W.W. 1987. Lizards and turtles of western Chihuahua. Great Basin Naturalist 47(3): 383-421.